# **Test Specifications** Distributor-Type Fuel Injection Pump

VDT-WPP 001/4 PEU 2,1 f 1

2. Edition

EP/VA 4/90 H 2250 CR 173-3

2 Test Specifications

0 460 394 022

supersedes5.75

company: Peugeot engine: XD 4/90 (504 D)

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** and Testers

**Test Intructions and Test Equipment** 

**VDT-WPP 161/4 B** 

Pre-setting see reverse side

	_						
Pre-stroke setting	0	mm	(see also	VDT-WJP	161/4.	Suppl.	1)

	<del></del>	re-setting see reverse side				
1.	. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm <sup>3</sup>
1.1	Timing device travel	1600	4,8 - 5,2	mm		-
1.2	Supply pump pressure	1600	4,5 - 5,0	kp/cm²		_
1.3	Full-foad defivery without charge-air pressure	1400	37,0 - 39,0	cm <sup>3</sup> /1000 strokes		1,5
	Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes	<u>.</u>	-
1.4	Idle speed regulation	350	5,0 - 11,0	cm <sup>3</sup> /1000 strokes		3,0
1.5	Start	50	mind. 50	cm <sup>3</sup> /1000 strokes		
1.6	Full-load speed regulation	2300	21,0 - 27,0	cm <sup>3</sup> /1000 strokes	]	

2.1 Timing device	ecificatio	700	ues in brackets <b>20</b> 0	n	2050_225	0 (2020-2280)
E Timing device	mm	1	200 7 <b>-</b> 2,3) 5,7-6,7	_	End	•
		1,0-2,0 (0,7	-2,3; 3,7-0,7	(3,4-7,0)	EIIU	(6, 1-6, 8)
2.2 Supply pump	rev/min	200	160	0	2000	
	kp/cm²	· · · · · · · · · · · · · · · · · · ·	7-1,8) (4,3-5,		5,5-6,0	5,3-6,2)
Overflow delivery	rev/min	500	160	0	2250	
	cm <sup>3</sup> /10 s	70-140 (65-1	145) 70–140 (65	-145)	70-140 (6	5-145)
2.3 Fuel deliveries	- <del></del>					<del></del>
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pr	essure kp/cm²
End slop	Full	2350-2400 (2330-2420)	1	0,0		
		2300		(20,0-28,0	,	
			00 00 5		` <b> </b>	
		2200	33,0–35,5	(32,5-36,0	יי	
		1400		(36,5-38,5	)	
		500	28,0-31,0	(27, 0-32, 0	)	
	Stop	2250		0		
				•		
Idie stop	Full	660-800		0		
		(640–820)			Į	
		350		(4, 0-12, 0)		
	Start	50		d. 50		

Angle to the	he stop-plate	Pre-setting dimensions	Pre-setting dimensions		
Pump α β γ δ	173-3 30 ± 4° 52 ± 5° 10 (+ 2-6°) max. 50°	Pump Dimension IV Dimension V	173-3 1,0 25,0		

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5 n

1. Edition

Testoil-ISO 4113

VE 4/9 F 2100 R 22-7

0 460 494 189

supersedes company:Sofim

engine: 8 144.67.220

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

mm = 0.02 (0.04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1800	7,6-8,0	mm		
1.2 Supply pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery without	-		cm³/1000 strokes		
charge-air pressure Full-load delivery with	2000	37,5-38,5	cm³/1000 strokes	İ	2,5 (3,0)
charge-air pressure 5.4 Idle speed regulation	370	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
1.5 Start	2350	19,0-25,0	cm³/1000 strokes	,	
1.6 Full-load speed regulation	100	min. 55	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-				

2. 1est 5pe	cincations	checking values in t	orackets ( )			
2.1 Timing device	uu u = ten/wiu	600 0,9-1,7 (	0,6-2,0)	1800 (7,1-8,5)		2000 9,1 (8,0-9,4
2.2 Supply pump	n = rev/min bar (kgf/cm²)		600 2-3,8		2000 7-7,3	
Ovarilow delivery	n = rev/min cm <sup>3</sup> /10 s				2100 8 (40-153)	
2.3 Fuel deliveries	<u></u>	•			3. Dimer	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2500 2350 2100 2000 1100 600	max. 4,5 36,7-39,3 43,5-46,5 35,3-38,3	(18,0-26,0) (35,7-40,3) (35,7-40,3) (42,7-47,3) (33,8-39,8)		K KF MS SVS	5,4-5,7 1,7-1,9
Switch Off					В	
End stop	370 420 500 400 480	min. 1,5 max. 3,0 min. 3 7 32,0-38,0	(6,0-14,0)		Observations	
2.4 Solenoid	cut-in voltage	e mir	10 V			

rated voltage 12 V.

Testoil-ISO 4113

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6p3

1. Edition

company: MAN

DO 226 MLE

Overflow temperature 45° C  $^{102}$  kW/1500 1/min

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

0.2

VE 6/12 F 750 R 139-1

0 460 426 065

mm ± 0,02 (0,04)

see VDT-W-460/...

1. Settings	Rot, speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	4,3-4,7	mm		
1.2 Supply pump pressure	700	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery without charge-air pressure	-		cm <sup>3</sup> /1000 strokes		
Full-load delivery with charge-air pressure	700	122,0-123,0	cm <sup>3</sup> /1000 strokes		4,0 (4,5)
1.4 Idle speed regulation	350	12,0-18,0	cm <sup>3</sup> /1000 strokes	ļ	3,5 (4,5)
1.5 Start	٠750	100,5-104,5	cm³/1000 strokes	4	
1.6 Full-load speed regulation	100	min.70,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	_				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min mm	300 2,0-2,8(1,7-3,1)	500 3,2-4,0(2,9-4,3)	700 (3,8-5,2)
2.2 Supply pump	n = rov/min bar (kgf/cm²)	300 4,2-4,8	500 5,2-5,8	
Overflow delivery n = rev/min cm <sup>3</sup> /10 s		300 42-83(27-98)		750 138(40-153)
	<del></del>	<u> </u>		2 Dimensions

	I		
2.3 Fuel delivertes			
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)
End stop	800 785 750 700 500 300	max. 2,5 11,0-19,0 (10,0-20,0) (97,5-107,5) (119,5-125,5 113,0-117,0(111,3-118,7 102,1-107,1(100,9-108,3	)
switch-off			
End stop	350 400 430 180 280	(10,0-20,0) 1,5-9,5 (0,5-10,5) max. 4,0 min. 105,0 max. 110,0	
2.4 Solenoid	cut-in voltage		<del></del>
	test voltage		

3. Dimens	3. Dimensions						
Designation	and adjustment mm						
K	_						
KF	5,7-6,0						
MS	1,0-1,2						
svs	]						
^							
В							
Observations pushing el 24 V	ectronagnet						

BOSCH

5

# Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 MB 3,0 w1

1. Edition

il-1SO 4113

PES 6 M 55 C 320 RS 156 RSF 315/2300 M 59-5 0 400 076 990 1-5-3-6-2-4 0-60-120-180-240-300 company Daimler Benz engine OM 603 80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15) mm (from BDC)

20**-**22

En

Note: Before starting testing, observe the Control rod travel important instruc-

tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25(0,3)			
290	5,4-5,6	0,55-0,65	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

## **B. Governor Settings**

Lower rated sp	eed		Upper rated :	speed	<del></del>	Variations in co	ntrol rod trav	rel
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
│ ②	min.7,0 5,4-5,6 4,2-4,4	220 290 360**	≻	10,6-10, 7,8-8,2	2500	(12) (13) (14)	100 1800 1000	min. 20,1 10,9-11,1 11,3-11,4
5	1,5	620-720		<b>~ !</b>	2950	6	Switching p	oint

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel 17	Starting f	uel delivery	
Test oil te	mp. 40°C (104°F)			(18)		1	Difference
rev/min	cm³/1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,5-35,5 (32,5-36,5)	2500*	1800 1000	34,0-35,5 (33,0-36,5) 31,5-32,5 (30,5-33,5)	100 290 2500	min. 55 5,5-6,5 (5,0-9,5) 22,0-26,0 (21,0-27,0)	6,0 (2a) 1,0 (1,5) 2,5 See (3,0)Point (6) 8 a

Checking values in brackets

\*ca. 2,6 less control rod travel than in Column 2

BOSCH

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 l/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=290~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0~mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 + 0.2 (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 315 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 l/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

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WPP 001/4 VOL 6,0 V

2. Edition

stoil-180 4113

PES 6 MW 100/320 RS 1004 RQV 300-1150 MW 54 0 403 446 148 1- 5- 3- 6- 2- 4 0-60-120-180-240-300 ± 0,50 (0,75) company: Volvo BM TD 60 LLK

125 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Cifference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,5+0,1	9,6-9,8	0,35(0,6)			
300 1000 700	5,0-5,1 11,5+0,1 10,7+0,1	, ,	0,35(0,55 0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control	rev/min Control	u avei	Degree of deflection of control		Control rod travel	Degree of deflection		Control rod travel		1
lever	rod travel mm 2	rev/min (2a) 3	lever	rev/min 5	mm 4	of control lever 7	rev/min 8	mm 3 9	rev/min 10	mm 11
max.	1150 1300	15,2-17,8 0-1,0				ca.14	300 100	5,0-5,1 min.6,8	1100 700 300	8,4-8,6 3,6-3,8 1,0-1,5
ca.51	10,5 4,0	1190-1200 1245-1275	1			<b>3a</b>	320-4	50		

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Fuil-load d Control-roo Test oil ten		Ilmitation Intermediate speed	high idle s	rery characteristics 58 peed 5b	Starting Idle switchir	• •	Torque- trevel	control (5)
rev/min	cm³/1000 strokes .	rev/min 4e	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,7 bar 96,0-98,0 (94,0-100,0	1190-1200* )	LDA 1000 LDA 700	0,7 bar 98,0-102,0 (95,5-104,5) 0 bar 82,0-84,0 (79,5-86,5)	100 300	130,0-140,0 (127,0-143,0 10,0-14,0 (7,5-16,5)	)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

BOSCH

Geschäftsbereich KM, Kundendienst. Kfz-Ausrüstung.

O by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany.
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Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
•	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1004 mit MW 54	0,38	0 0,45 0,70	10,8-10,9 10,7-10,8 11,3-11,4 11,5-11,6

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Note: Check magnet with 24 V.

WPP 001/4 IHC 7,6 h

3. Edition

En

supersedes8.83 company IHC DT 466 B 154,5 kW

0 403 476 014

PES 6 MW 100/320 RS 1109

RSV 500-1250 MW 2/312

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

4,00-4,10 (3,95-4,15)

 $^{\text{mm (from BDC)}}$  RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm1/100 strokes	mm
1	2	3	4	2	3	6
800	11,6+0,1	10,0-10,2	0,35 (0,6)			
500 1250	5,4-5,5 11,6+0,1	1,9-2,3	0,35(0,55) 0,65 (0,7)			
DHK 1 68 Fuel inj	8 901 016/2 ection test	07 + 3 bar tubing 1 660	750 008			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Intermed	diate rated	speed	(4)	Lower	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	В	9	10	11
loose	800	0,3-1,0				ca. 29	500	5,4-5,5		
						1	100	min. 19		
ca.53,5	1280_13	300 = 10,6								
23,5		380 = 10,0		•						
	1560 =	0,3-1,7	Ĺ			·		<u> </u>		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat	(38) Fu	tel delivery paracteristics	Starting t	luel delivery 5	(4a) Idi	e stop
rest oil (i res/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control red travel mm
800	100,5-102,5 (98,5-104,5)		1250	102,5-106,5 (100,5-108,5)	100 500	140-180 (137-183) 19-23 16,5-25,5)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.85

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 l/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

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WPP 001/4 IHC 7,6p1

En 1. Edition

**Testoil-ISO 4113** 

PES 6 MW 100/320 RS 1109 RSV 350-1250 MW 2/312-1 0 403 476 021 1-5-3-6-2-4 je 60°

supersedesT Company IHC engine DT 466 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

4,00-4,10 (3,95-4,15)

mm (from BDC) RW = 9-12 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	10,2+0,1	8,1-8,3	0,35(0,6)			
350 1250	5,7-5,8 9,2-9,3	1,9-2,3	0,35(0,55) 0,65(0,7)			
	901 016 20 ection test	7+3 bar tubing 1 680 7	50 008			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	ĺ			ca.29	350	5.7-5.8	850	10,2-10,3
			Ĭ			ļ	100	min.19	1200	9,3-9,4
ca.57,5	1200-1	300=8,2	1				}			<u> </u>
2e <sup>5</sup>		375=4,0							İ	i
		,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	Rotational- speed limital	11361	rel delivery paracteristics	Starting (	fuel delivery 5	<b>4a</b> ) (d	e stop
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
800	81,0-83,0 (79,0-85,0)		1250	74,5-76,5 (72,5-78,5)	100	140-180 (137-183)		
					350	19 <b>-</b> 23 (16,5 <b>-</b> 25,	5)	
						(16,5-25,	5)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

A11

rev/min decreasing pressure - in bar gauge pressure

	<u> </u>			2o , , op .	
Pump/governor	Setting	Measurement	Contro	diminution rod travet difference	
	Gauge pressure =	bar Gauge pressure	= bar mm	(1)	
				·	
	1	1	!		

Notes:

(1) when n =

Testatn =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

IHC 7.6p1

-2-

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

WPP 001/4 IHC 7,6p3

1. Edition

PES 6 MW 100/320 RS 1109 RSV 350-1200 MW 2/312-2 0 403 476 022 -5-3-6-2-4 je 60°

supersedes IHC company DT 466 C 109 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

B. Errol Injection Pump Cattings DHK 1 688 901 016/207 + 3 bar A. Fuel Injection Pump Settings Fuel injection test tubing 1 680 750 008

Port closing at prestroke

Testoil-ISO

(3,95-4,15)

mm (from BDC) RH = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control red travel	Fuel delivery -	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm%100 strokes	ពាធា
!	2	3	4	2	3	6
800	9,6-9,7	7,3-7,5	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35 (0,55			
1200	8,9-9,0		0,65 (0,7)			
						•

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed		Intern	nediate rat	ed speed	(4)	Lowe	rated speed	(3) 10	rque control
Degree of deflection	Control rod	travel				Control- lever deflection	/mia	Control rod travel	rev/min	Control rod   travel   mm
of control lever 1	mm 2	mm rev/min 3	4	5	6	in degrees	rev/min 8	9	10	11
loose	800	0,3-1,0				ca. 29	350	5,7-5,8	1100	8,9-9,0
ca,55,5							100	min. 19	850	9,6-9,7
± 2,5	1240-1 1295-1	250 = 7,9 305 = 4,0 0 - 1,0								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational-	(3a) Fu	uel delivery paracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil to	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control roc travel mm
1	2	3 •	4	5	6	7	8	9
800	73,0-75,0 (71,0-77,0)		1200	68,5-70,5 (65,5-74,5)	100	140-180 (137-183)		
					350	19-23 (16,5-25,	5)	
						(10,5-25,	P)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.85

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- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 1/min.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

40

WPP 001/4 IHC 7,6p

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1109 RSV 350-1250 MW 2/312-3 0 403 476 023 1-5-3-6-2-4 je 60° companIHC engine DT 466 C 114 KW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

4,00-4,10 (3,95-4,15)

mm (from BDC RW = 9-12 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm 2	cm1/100 strokes	mm 6
800	10,3-10,4	8,05-8,25	0,35 (0,6)			
350	5,7-5,8	1,9-2,3	0,35(0,55)			
1250	9,1-9,2		0,65 (0,7)	)		
	901 016 20 ction test	7+3 bar tubing 1 680	750 008			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Uppe Degree of	Upper rated speed rev/min Degree of   Control rod   Control rod			Intermediate rated speed			Lower rated speed Control Control			Torque control   Control rod	
deflection of control lever	travel mm	travel mm rev/min 3		5		lever deflection in degrees	rev/min	travel mm	rev/min	travel mm	
ļ'	4	<u> </u>	ļ <u>"</u> —	13	6	ļ <u></u>			10	<del>''</del>	
loose	800	0,3-1,0				ca. 29	350	5,7-5,8	1150	9,1-9,2	
	ŀ						100	min. 19	850	10,3-10,4	
ca.57,5 ±2,5	1290-1 1350-1	300 = 8,1 360 = 4,0 0,3-1,7		<b>-</b>							

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>5</b> 4a '		
rokes rev/min	i_	
8 	- 9	
180 183)		
5,5)		
	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. 6. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Test at n =

rev/min decreasing pressure - in bar gauge pressure

IHC 7,6p

Fump/governor	Setting .	Measurement		diminution difference
	Gauge pressure = har	Gauge pressure = bar	mm (1)	
	,			
		٠		;

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 1/min.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

WPP 001/4 IHC 7,6k 3. Edition

PES 6 MW 100/320 RS 1109 RSV 415-1200 MW 2/313

supersede 8.83 company IHC

DT 466 B 158 kW

0 403 476 015 DHK 1 688 901 016/207 + 3 bar

Fuel injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO** 

4,00-4,10 (3 95-A 15)

mm (from BDC)

RW = 9,0 - 12,0 mm

		, 33-4, 13/				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	
4		13	A	],""	Citi 7100 Strokes	mm 6
<del></del>	-			<u> </u>		
900	12,1-12,2	11,2-11,4	0,35(0,6)			i
415	5,1-5,3	1,6-2,0	0,35(0,55)			
1200	11,3-11,4	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0,65(0,7)			
500	10,3-10,4	ĺ	', ', ', ', ', ', ', ', ', ', ', ', ',			
	,,,,			i	ļ	
	1					
				1		İ

Adjust the fuel delivery from each outlet according to the values in E

## **B. Governor Settings**

	Upper rated speed rev/min Degree of   Control rod   Control rod			Intermediate valed speed			Lower rated speed Control			Torque control		
deflection of control lever	travel mm	travel mm rev/min				lever deflection in degrees	rev/min	travel mm	rev/min	trave! mm		
1	2	3	4	5	6	7	8	9	10	11		
loose	800	0,3-1,0				ca.24	415	5,2	1100	11,3-11,4		
			]				415	5,1-5,3	950	12,0-12,1		
ca.51,5 ± 2,5 (2a)	1235-1	255=10,3 335= 4,0 ,3-1,7					100	min.19				

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational- speed limitat	(38) Fu	el delivery aracteristics	Starting fuel delivery 5 4a Idle stop			
Test oit te rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control ro travel mm
LDA 900	0,9 bar 112,0-114,0 110,0-116,0)		LDA 1200	0,9 bar 105,0-109,0 103,0-111,0)	100	140-180 (137-183)		
			LDA 500	0 bar 83,0-85,0 (81,0-87,0)	415	16,0-20,0 (13,5-22,5	)	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

IHC 7,6k

-2-

Pump/governor	Setting	Measurement	diminution Control rod travet difference
	Gauge pressure = ba	r Gauge pressure = bar	mm (1) .
RS 1109 mit MW 2/313	0,28	0,57 0 0,90	10,8-10,9 11,5-11,8 10,3-10,4 12,1-12,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

40

WPP 001/4 IHC 7,6p4

1. Edition

En

PES 6 MW 100/320 RS 1109 RSV 350-1250 MW 2/313-3 0 403 476 030 1-5-3-6-2-4 je 60° supersedes IHC
company DTI 466 C
engine 160 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO** 

(3,90-4,10)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>9</sup> /109 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
800	13,4+0,1	11,65-11,85	0,35 (0,6)		,,	ê
350	6,3-6,4	1,8-2,3	D,35(0,55)			
1250	12,2+0,1		0,65 (0,7)		l L	
500	11,4+0,1		8 901 016/		,	
		Fuel in:	<u>ection tes</u>	t tubing 1	680 750 008	<u> </u>

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

(1) Uppe	er rated speed		intern	nediate ra	ted speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control	Control rod travel	Control rod trazel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0				ca. 24	350	6,3-6,4	800	13,4-13,5
							100	min. 19	1250 840	12,2-12,3 13,4-13,5
ca.54 ± 2,5	1390-14	00 = 11,2 00 = 4,0 0,3-1,7							1200	12,2-12,3

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

1	uil-load stop	Rotational- speed limitat		iel delivery aracteristics	Starting (	uel delivery 5	da Idle stop		
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9	
LDA 800	0,9 bar 116,5-118,5 (114,5-120,5)		LDA 1250 LDA 500	0,9 bar 105,0-107,0 103,0-109,0) 0 bar 82,0-84,0 79,0-87,0)	100 350	140-180 (137-183) 18,0-23,0 (16,5-25,5		1,5-2,0 mm vor Stop	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

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Test at n =

rev/min decreasing pressure - in bar gauge pressure

IHC 7,6p4

-2-

500	o rev/min increasing pres	ssure - In	oar gauge pressure			
Pump/governor	Setting		Measurement		diminution Gentrol rod travel-difference	
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1) .	
RS 1109 mit MW 2/313-3	0,2		0 0,49 0,90		11,8-11,9 11,4-11,5 12,8-12,9 13,4-13,5	
				/		

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Starting rejection speed of holding magnet greater than 500 l/min.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set poppet at high idle to contact at 4 mm control-rod travel and then 1 turn back.

40

WPP 001/4 IHC 7,6r4

1. Edition

PES 6 MW 100/320 RS 1121 RSV 500-1250 MW 2/312-5 0 403 476 047 supersedes: IHC company DTI-466 C engine 167 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-iSO

3.95-4.05 (3.90-4.10)

mm (from 8DC) RW = 9,0 - 12,0 mm

En

Rotational speed rev/min t	Control rod travel	Fuel delivery . cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
950	10,9+0.1	10,6-10.8	0.35(0.6)			
500 1250	5.4-5.5 10.9+0.1	1.6-2.0	0.35(0 5) 0.65(0.7)			
DHK 1 68 Fuel inj	8 901 016/2 ection_test	07 + 3 bar tubing 1 680	750 008			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	er rated speed		Interm	ediate rate	d speed	4	Lowe	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0.3-1.0				ca. 28	500	5,4-5,5		
ca.57.5 ±2.5	1295- 1365-	1305=9.9 1375=4.0 0.3-1.7		·			100	min.19		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat		iel delivery paracteristics	Starting tidle	luel delivery 5	da Idle stop Control rod travel	
rev/min 1	cm <sup>3</sup> /1000 strokes	changed to) rov/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	mm 9
950	106.0-108.0 (104,0-110.0)		1250	108,0-112,0 (106,0-114,0)	100	140-180 (137-183)		
	·				500	16,0 <b>-</b> 20,0 13,5 <b>-</b> 22,5		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

rev/min decreasing pressure - in bar gauge pressure -2-IHC 7,6r4 diminution . Pump/governor Setting Measurement Gauge pressure = Gauge pressure = (1)

Notes:

(1) when n =

Test at n =

rev/min and gauge pressure = bar (= maximum full-foad control rod travel)

#### Hinweise:

- Pumpeneinstellung nur mit Orig.-Überströmventil und IH-Schlauch mit Drossel 1.2 mm Durchmesser durchführen.
- FB-Anriß-Stophebel um 25 Grad Richtung Stop RW = 9-12 mm (Leerweg vom Stophebel muß vorher überwunden sein).
- Im entriegelten Zustand darf nicht größer n = 500 1/mingefahren werden.
- Unteren Leerlauf an Anschlagschraube einstellen.
- Stopanschlag 1.5 2.0 mm vor Stop einstellen
- Hydr. Startverriegelung mit 1.5 bar Luft prüfen.
- Leerlaufzusatzfeder im oberen Leerlauf bei 4 mm RW berührend anstellen und 1 Umdrehung zurück.

WPP G01/4 IHC 7,6r5

1. Edition

En

PES 6 MW 100/320 RS 1121 RSV 450-1200 MW 2 A 313-1 0 403 476 024 DHK 1 688 901 016/207 + 3 bar

Fuel injection test tubing 1 680 750 008

Supersede THC company DTI-466 C 175 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,90-4,10)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring-pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
900	12,3-12,4	12,2-12,4	0,35(0,6)			
450 1200 500	5,7-5,8 11,9+0,1 10,7+0,1	1,8-2,2	0,35(0,5) 0,65(0,7)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rat	ed speed	(4)	Lowe	r rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel	Controt rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	Control rod travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	17
loose	800	0,3-1,0				ca. 22	450	5,7-5,8	1200	11,9-12,0
	يديد والمساور	والمراجع والمراجع المساورة والمساورة والمساورة والمساورة والمراجع والمساورة	الُ				100	min.19	1150	11,9-12,0
ca.47.5	1320-1	250=10,9 330=4,0							800 600	12,3-12,4 12,3-12,5
	1400=1	0,3-1,7			····	ļ		<u> </u>	<u>L</u>	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

20	ill-load stop	6 Rotational- speed limitat	II JAII	el delivery paracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
20A 800	0,9 bar 122,0-124,0 (120,0-126,0)		LDA 1200 LDA 500	0,9 bar 118,0-120,0 (116,0-122,0) 0 bar 91,0-93,0 (89,0-95,0)	100 450	140-180 (137-183) 18,0-22,0 (15,5-24,5		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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Pump/gavernor	Setting	Measurement	diminution Control rod travel-difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
RS 1121 mit MW 2 A 313-1	0.54	0 0.26 0.90	11,9-12.0 10.7-10.8 11.1-11.2 12.3-12.4

Notes:

(1) when n =

revimin and gauge pressure =

bar (= maximum full-load control rod travel)

-2-

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 l/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then I turn back.

WPP 001/4 KHD 20,2 c

2. Edition

supersedes 6.83 RSUV 250-800 P 10 A 318 R PE 8 P 120 A 620/4 LS 325 company KHD Komb.-Nr. 0 401 878 091 BA 8 M 816

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°±0,5°(±0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm//	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	100 strokes	mm 2	cm /100 strokes	mm 6
750	14,9+0,1	29,5 <b>-</b> 29,9 (29,2 <b>-</b> 30,2)	0,5(0,9)			, and the second
250	6,0-6,2	2,0-2,6 (1,7 <b>-</b> 2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

### **B. Governor Settings**

1 Uppe	r rated speed		Interme	diate rated	speed	(4)		rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	Control rod travel
lever 1	2 -	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	~	-	ca.19	250	5,9	800	14,9-15,0
	X =	4,0					250	6,3-6,5	300	16,2-16,8
ca.53	13.9	840-850			a		280-3	0 = 2,0	450	14,9-15,0
(2a) .53	4,0 1050	860-910 0,3-1,7			!			•		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	luel delivery 5	<b>4a</b> ) 'd	le stop
	cm <sup>1</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>1</sup> /1000 strokes 5	rev/min 6	cm1/1000 strokes 7	rev/min 8	Control rod travel mm 9
	known. st according to	840-850 * the engine	- recor	ds.	-		-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. 
< 1980 by Robert Bosch GmbH. Postfach SO. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

40

WPP 001/4 IHC 7,6x3

companyDTI-466 C

engine 156,6 kW

1. Edition

supersed THC

En

PES 6 MW 100/320 RS 1121 RSV 450-1200 MW 2 A 313-2

0 403 476 025 DHK 1 <u>68</u>8 901 016/207 + 3 bar

Fuel injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,90-4,70)

mm (from BDCRW=9-12 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod trave!	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes 4	mm 2	cm <sup>4</sup> /100 strokes 3	mm 6
800	10,6+0,1	10,85-11,05	0,35(0,6)			
450 1200 500	4,8-4,9 9,9-10,0 9,0-9,1	1,8-2,2	0,35(0,5) 0,65(0,7)			
					<b>~</b>	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

(1) Uppe	er rated speed	l rev/min	Intern	nediate rai	ied speed	(4)	Lowe	er rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0				ca. 30	<del></del>	4,8-4,9	1200	9,9-10,0
ca.59,5	1355-	1270=8,9 1365=4,0 0,3-1,7	<u> </u>	<b></b> .			100	min.19	850 800	10,6-10,7 10,3-10,7

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational-speed limital (3a) Fuel delivery characteristics			Starting I	uel delivery 5	4a) Idle stop		
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strakes 7	rev/min 8	Control rod travel mm	
LDA 800	0,9 bar 108,5-110,5 (106,5-112,5)		LDA 1200 LDA 500	0,9 bar 102,5-104,5 (116,0-122,0) 0 bar 78,0-80,0 (76,0-82,0)	100 450	140-180 (137-183) 18,0-22,0 (15,5-24,5			

Checking values in brackets

\* 1 mm less control rod travel than col 2



Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

IHC 7,6r3

-2-

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1121 mit MW 2 A 313-2	0.57	0 0,32 0.90	10,2-10,3 9,0-9,1 9,3-9,4 10.6-10.7

Notes.

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- In unlocked state do not run at greater than n = 500 1/min.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

WPP 001/4 IHC 7,6r2

1. Edition

En

Port closing at prestroke

Testoil-ISO

PES 6 MW 100/320 RS 1122 RSV 350-1050 MW 2/312-4 0 403 476 026

DHK 1 688 901 016/207 + 3 bar

Fuel injection test tubing 1 680 750 008

supersedescompany IHC DT 466 engine 118 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

3,95-4,05

(3,90-4,10)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
700	13,0+0,1	10,2-10,4	0,35 (0,6)			
350 1050	6,2-6,3 11,9-12,0	1,3-1,7	0,35(0,55) 0,65 (0,7)			
						,

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

r rated speed	rev/min	Intern	nediate rate	ed speed	4	Lowe	r rated speed	(3) 10	rque control
Control rod travel	Control rod travel				Control-		Control rod travel		Control rod travel
mm	mm rev/min			1.	deflection in degrees	rev/min	mm	rev/min	mm
2	3	4	5	6	7	8	9	10	11
800	0,3-1,0				ca. 19	350	6,2-6,3	1050	11,9-12,0
						100	min. 19	600	13,0-13,1 13,3-13,6
1155-116	55 = 4,0								
	Control rod travel mm 2 800 1090-1101155-110	mm mm rev/min 2 3	Control rod travel mm mm rev/min 2 3 4  800 0,3-1,0  1090-1100 = 11,1 1155-1165 = 4,0	Control rod travel mm rev/min  2	Control rod travel travel mm rev/min 2 3 4 5 6  800 0,3-1,0  1090-1100 = 11,1 1155-1165 = 4,0	Control rod travel mm rev/min 2	Control rod travel mm rev/min 2 3 4 5 6 Control tever deflection in degrees 7 rev/min 8 800 0,3-1,0 Ca. 19 350 100 1090-1100 = 11,1 1155-1165 = 4,0	Control rod travel mm rev/min 2 5 6 Control rod travel mm rev/min 3 5 6 Control rod travel mm rev/min 8 9 800 0,3-1,0	Control rod travel mm rev/min 2 3 4 5 6 7 Control tever deflection in degrees 7 Rev/min 9 10 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 min. 19 Rev/min 100 m

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

6	ill-load stop	6 Rotational- speed limitat	11.7/1	uel delivery paracteristics	Starting Idle	luel delivery 5	4a Idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control root travel mm
1	2	3	4	5	6	7	8	9
700	102,0-104,0 (100,0-106,0)		1050	91,0-93,0 (88,0-96,0)	100 350	140-180 (137-183) 13,0-17,0 10,5-19,5)		
			·					

Checking values in brackets

\* 1 mm less control rod travel than col 2

B4

- Set pump only with original overflow valve and IH hose with 1.2 mm diameter restriction.
- Start-of-delivery mark stop lever by 25° toward shutoff control-rod travel = 9-12 mm (overcome free travel of stop lever beforehand).
- In unlocked state do not run at greater than n = 500 1/min.
- Set low idle at stop screw.
- Set shutoff stop to 1.5 2.0 mm before shutoff.
- Check hydraulic starting-lock with 1.5 bar air pressure.
- Set idle auxiliary spring at high idle to contact at 4 mm control-rod travel and then 1 turn back.

WPP 001/4 MB 6,0 d 9

2. Edition

**Festoil-ISO 411** 

PES 6 MW 100/720 RS 1131 ROV 300-1300 MW 50-1 0 403 446 158 1-5-3-6-2-4 je 60°

supersedes 11.85

company: Daimler-Benz engine: OM 366 LA

150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Fuel injection test tubing 1 680 750 008

Port closing at pres	stroke (	3.65-3.85)	mm (from BDC)	RW	1 = 9,0 - 12,0	mm
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	12,3+0,1	9,35-9,55	,35(0,6)			
300	6,1-6,2	1,0 -1,4	0,35(0,55)			
600			<b>0,5</b> (0,7)			
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Stiding s	eeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	mm	Degree of deflection of control lever	rev/min 5	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	(1) mm
<u> </u>	-	3	 	-	6	<del> </del>	•	3		
max.	1340 1550	15,2-17, 0- 1,		•	:	ca. 15	l	min. 7,6 6,1 -6,2		
ca. 52	11,3 4,0	1340-135 1440-147				<u> </u>	350-5	50		

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np. 40°C (104°F) 2	limitation intermediate speed	high idle s	( S)	idle switchii	ng point	travel	Control 5 Control roc travel
rev/min	cm <sup>3</sup> /1000 strokes - 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	9 
LDA 1300	0,7 bar 93,5-95,5 (91,5-97,5		LDA 600 LDA 500	87,5-91,5 (85,5-93,5) 0 bar 56,5-58,5	100 300 100-2	80,0-90,0 (77,0-93,0) 10,0-14 (7,5-16,5) 20 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

**B6** 

Yest at n = 500 rev/min decreasing pressure - in bar gauge pressure

MB 6,0dg

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1131 mit RQVMW 50-1	0,17	0,22 0 0,70	10,8-11,0 11,9-12,2 10,6-10,7 12,3-12,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

40

WPP 001/4 DAF 11,6 k 17

1. Edition

En

PE 6 P 120 A 320 RS 372-1 Y

RSV 250-1100 P 5 A 508-2

supersedes=

Komb.-Nr. 0 401 876 311

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company DAF

engine DKX 1160

igine: 243 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
850	11,4+0,1	18,4-18,6	0,5 (0,9)			
250	6,4-6,6	1,1-1,5	0,8 (1,2)			
•				:		

Adjust the fuel delivery from each outlet according to the values in  $\Box$ 

## **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interm	ediate rat	ed speed	(4)	Lower	rated speed	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
loose	800	0,3-0,7	-	-	-	ca. 24	250	6,0	850	11,6-11,7	
	x = 5,0						250	6,4-6,6	400 300	11,6-11,8 11,9-12,4	
ca. 54	10,4 4,0 1425	1140-1150 1270-1300 0,3-1,4					640-70				

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) F(	III-load stop	6 Rotational- speed limitat		rel delivery paracteristics	Starting t	luel delivery 5	4a Idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
LDA 850	0,7 bar 183,5-185,5 (180,5-188,5)	1140-1150*	LDA 600	0 bar 135,5-137,5 (132,5-140,5)	100 250	315,0-355, (311,0-359, 11,0-15,0 (8,0-18,0	0)	

Checking values in brackets

12.85

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. £ 1980 by Robert Bosch GmbH. Positach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

<sup>\* 1</sup> mm less control rod travel than col. 2

DAF 11,6 k 17

- 2 -

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PRS 372-1 Y + RSVP 5 A 508-2	0,70	0 0,37 0,30	11,4-11,5 10,0-10,1 11,0-11,1 10,5-10,9

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

13

Testoil-ISO 41

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 11.1 1 6 4. Edition

PES 6 P 120 A 320 LS 403

RO 250/1100 PA 487 R

supersedes company:

9.84 MAN

Komb.-Nr. 0 402 046 198

Values only apply to test nozzle-and-holder assembly

engine:

D 2566 MKUL

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
750	13,040,	21,5-21,7	0,5(0,9)	·		
250	6,3-6,5	1,2-1,8	0,8(1,2)			
	0					

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

Checkin PRG che	g of slider rck Control rod	Full-load s Setting po	•	-	cifications (4)	Idle spec Setting p	•		cifications 5	Torque o	control Control rod
rev/min	travel	rev/min 3	red travel	nd travel mm	rev/min 6	rev/min 7	red travel	rev/min 9	travel	rev/min 11	travel
600 VH≡m	19,2-20,8 ax. 46°	600	20,0	10,3 4,0 1300	1145-1160 1185-1215 0-1,0		6,4	250	5,3- 6,5 1 875=2,0	100 925	13,0-13,1 11,3-11,4 12,5-12,7 11,7-12,0

Torque-control travel on flyweight assembly dimension a = 0,55

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	uel delivery d Control
rev/min	cm <sup>3</sup> /~1000 strokes	rev/min 3	rev/min 4	cm³/-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes/ mm
LDA 750	1,0 bar 215,0-217,0 (212,0-220,0)	-	LDA 500	0,29 bar 134,0-140,0 (131,0-143,0)	100	205,0-245,0 (201,0-249,0)
1100	177,0-183,0 (174,0-186,0)	·	LDA	0 bar		
650	206,0-212,0 (203,0-215,0)		500	111,0-113,0 (108,0-116,0)		

Checking values in brackets

BOSCH

1.86

Test at n =

rev/min decreasing pressure - in bar gauge pressure

MAN 11,1 1 6

-2-

500_	1	1	diminution
Pump/governor	Setting	Measurement	Control rod travel-
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES6PLS 403 + RQPA 487 R	1,0	0 0,29 0,58	13,0-13,1 9,7-9,8 10,7-10,8 12,4-12,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum fulf-load control rod travel)

WPP 001/4 DAF 11,6 v 3

1. Edition

En

PE 6 P 110 A 320 RS 407-1

RSV 275-1000 P 5 A 508-7

supersedes.

Komb.-Nr. 0 401 876 307

compan DAF engine DKFL 1160 185 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(2,75-2,95)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery  cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>1</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
600	12,8+0,1	15,2-15,4	0,4 (0,75)	-		Ů
275	7,0-7,2	0,9-1,4	0,45(0,75			0
		İ				

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed		Intermediate rated speed			4	Lower	rated speed	3 Torque control		
Degree of deflection of control	Control rod travel mm	travel mm rev/min				Control- lever deflection	rev/min	Contro: rod travel mm	rev/min	Control rod travel mm	
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11	
loose	800	0,3-0,7	-	-	-	ca. 25	275	6,6	600	13,0-13,1	
	x = 5.0						275	7,0-7,2	1000	12,1-12,3	
ca. 50	4,0	1040-1050 1195-1225 0,3-1,4					700-760	= 2,0	790 865	12,6-12,8 12,2-12,5	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(26) Ft	ill-load stop	6 Rotational-, speed limital		uel delivery paracteristics	Starting t	luel delivery 5	4a) Idle stop	
Test oil to	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 600	0,7 bar 151,5-153,5 (149,0-156,0)	1040-1050 *	LDA 1000	0,7 bar 136,0-140,0 (133,0-143,0)	100 275	245,0-285 (241,0-289 9,0-14,0 (6,5-16,5	,0)	-
			LDA 600	0 bar 137,0-139,0 (134 5-141 5)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Test at n =

rev/min decreasing pressure – in bar gauge pressure

DAF 11,6 v 3

- 2 -

000			r
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6PRS 407-1 +RSVP5A 508-7	0,70	0 0,30 0,26	12,8-12,9 12,1-12,2 12,6-12,7 12,3-12,5

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 CAT 10,5 b 1

1. Edition

PES 6 P 80 A 720 LS 425 RQV 300-1000 PA 577-1

Komb.-Nr. 9 400 087 285

supersedes-

company: Caterpillar 3306 BA 125 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroka	(1,90-2,10)	mm (from BDC)	<del></del>		
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
990	12,0+0,1	9,7-9,8	0,25 (0,4			
300	6,8-7,0	0,9-1,6	0,2 (0,3	)		
	· .					
			1			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated t	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod ta travel mm rev/min 28	deflection of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	rev/min	0
max.	1010	15,2-17,8	-	-	-	ca. 16	200 300	min. 11,9 6,4-6,6		
ca. 69	11,0 4,0 1180	1020-1030 1090-1120 0 - 1,0	,		220-370			550 = 2,0		
						<b>3a</b>				

Torque control travel a = 0,75 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel dali high idle :	very characteristics	Starting idle switchir		Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokas	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
990	97,0-98,0 (95,5-99,5)	1020-1030 *	700 500	103,0-105,0 (102,0-106,0 101,0-103,0 (100,0-104,0	) .	152,0-172,0 =17,6-18,6 mm RW	850 700	2,0+0,1 12,2+0,3 12,5+0,2 12,7+0,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

BOSCH

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## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 MB 11,4 1 15

1. Edition

PES 6 P 110 A 820 LS 442-1

Komb.-Nr. 0 402 076 055

RSV 300-1100 POA 485-2

supersedes company:

engine

Daimler-Benz OM 407 122 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

3,2-3,3 (3,15-3,35)

mm (from BDC)

Cyl. 6; RW = 9.0-12.0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fue∜ delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1100	8,6-8,7	8,0-8,2	0,4 (0,8)			
300	7,7-7,9	1,4-2,0	0,4 (0,7)			
600	-	C, Sp. 4 u. 5	0,6 (0,9)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	· · ·	Intermed	liate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod   travel   mm
loose	800 x =	0,3-1,0	-	-	-	ca. 28	300 300	7,8 7,7-7,9		8,6-8,7 9,8-10,0 9,4-9,6
ca. 54	7,6 4,0 1350	1130-1140 1170-1200 0,3-1,4	l	t idle	e-spee	d auxili	ary spr	** ng at 2	950 nm con	8,8-9,0 trol-rod tra

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-foad stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	fuel delivery 5	<b>4a</b> ) Idi	e stop (Control rod
Test oil to rev/min 1	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1 <b>00</b> 0 strokes 5	rev/min 6	cm³/1000 strokes 7	fev/min 8	travel mm 9
1100	80,0-82,0 (77,5-84,5)	1130-1140*	600	75,0-79,0 (72,0-82,0)	100	130,0-150 (126,0-154		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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1. Edition

PES 6 P 80 A 720 LS 456

ROV 350-1000 PA 609-5

Komb.-Nr. 9 400 087 325

supersedes

company: Caterpillar

3306 T

150 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pre	stroke	(1.60-1.80)	mm (frcm BDC)	RW	= 9,0 - 12,0	mm
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
990	12,5+0,1	11,1-11,2	0,2 (0,3	5)		

ľ	rev/min 1	mm 2	3	4	mm 2	3	6
	990	12,5+0,1	11,1-11,2	0,2 (0,3	5)		
	350	6,7-6,9	1,0-1,7	0,2(0,3)		:	
١							

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed	1	Intermediat	e rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection	ĺ	Control rod travel		. ①
· .	rod travel mm	mm rev/min (2	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1010	15,2-17,8	-	-	-	ca. 17	250 350	min.11,		0,5-2,0 2,7-3,1
ca. 69	11,5 4.0	1020-1030 1090-1120					1	5,9-6,1 570 = 2,0	500	3,5-4,2 6,1-6,6
	1220					300-40	0		1010	8,5
			İ			<b>3a</b>				

Torque control travel a = 1,0 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle :	very characteristics (5a)	Starting Idle switching		Torque- travel	control 5
rev/min	cfh³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
990	111,0-112,0 (109,5-113,5)	B <sup>*</sup>	500 700	117,0-119,0 (116,0-120,0 114,5-116,5 (113,5-117,5	)	152,0-172,0 =17,6-18,6 mm RW	990 500 700 850	12,5+0, 13,5+0, 13,4+0, 12,8+0,
						· · · · · · · · · · · · · · · · · · ·		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

## Test Specifications Fuel Injection Pumps ① and Governors

1. Edition

PES 6 P 80 A 720 LS 456 Komb.-Nr. 9 400 087 280

RQV 400-1100 PA 626

supersedes

companyCaterpillar engine: 3306 T 170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

				T T	
ontrol rod avel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
ım İ	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
	3	4	2	3	6
3,3+0,1	12,5-12,6	0,25(0,4)			
6,6-6,8	0,9-1,6	0,2(0,35)			
•					
				}	
	3,3+0,1	cm <sup>3</sup> /100 strokes 3 3,3+0,1 12,5-12,6	cm <sup>3</sup> /100 strokes cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 s	travel cm³/100 strokes 3 cm³/ 100 strokes 4 cm³/ 100 strokes 3 2 2 3,3+0,1 12,5-12,6 0,25(0,4)	travel cm³/100 strokes cm³/ 100 strokes mm cm³/100 strokes 3 cm³/100 strokes 3 cm³/100 strokes 3

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_\_

#### **B. Governor Settings**

والمستندها ويستان ما				Intermediate rated speed			Lower rated	speed	Sliding sleeve travel			
deflection of control lever	Control rod travel	(rave)	(1a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm (4	9	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3		mm 11
max. ca. 69	12,3	15,2-17, 1130-114 1230-126 0-1,0	0	40a	-	-		ca. 20 350-450	400	min.11,0 5,8-6,0 580 = 2,0		

Torque control travel a = 0,50mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle :	very characteristics 5a	Starting Idle awitchir		Torque- travel	-control 5
rev/min 1	cm³/1000 strokes	rev/min 4a)	rev/min	cm <sup>3</sup> /1090 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
1100	125,0-126,0 (123,5-127,5)	1130-1140*	700 500	121,0-123,0 (120,0-124,0 119,0-121,0 (118,0-122,0		152,0-172,0 =17,6-18,6 mm RW	950	13,3+0, 13,5+0, 13,7+0, 13,8+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

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## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 11.8 a

1. Edition

PE 8 P 110 A 320 RS 467 Komb.-Nr. 9 400 087 288

RSV 350-1150 P 1/503

companyD 232 V 8

1- 8- 5- 4 - 7 - 2 - 3 - 6 0-30-90-120-180-210-270-300° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,80-2,90 (2,75-2,95)

mm (from BDC) RW=9,0-12,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm4100 strokes	mm
1	2	3	4	2	3	6
1150	12,2+0,1	13,7-14,0	0,4 (0,75)			
350	6,4-6,6	1,1-1,6	0,45(0,75)			
			ļ			
	ļ					
	<b>{</b>					L

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	11 5 /	rque control Control rod travel mm
loose	800	0,3-1,0	•	-	•	ca. 22	350	6,0	600	
ca. 57		1190-1200 1235-1265 0,3-1,7					100 350 400-4	min.19,0 6,4-6,6 50 = 2,0	400	13,4-14,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F)	Note: changed to)		el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting f Idle rev/min	uel delivery 5 cm³/1000 strokes	Idle stop  Control rod travel rev/min mm		
1	2	3	4	5	6	7	8	9	
1150	136,5-139,5 (134,0-142,0)	1190-1200*	600	134,0-138,0 (131,0-141,0)	100	19,0-21,0 mm RW	-	<del>-</del>	

Checking values in brackets

1 mm less control rod travel than col 2

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 8,8 L 3. Edition

ROV 275-1200 PA 425-3 PE 6 P 120 A 320 RS 474

Komb.-Nr. 0 401 846 499

Rotational speed

rev/min

1200

275

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 supersedes 7.84

company: RVI

MIDS 0620 30

168 kW

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

Fuel delivery

cm<sup>3</sup>/100 strokes

14,8-15,0

0.8 - 1.4

A. Fuel Injection Pump Settings Port closing at prestroke (3,45-3,65)

Control rod travel

5.7-6.0

mm

mm (from BDC)

Difference cm<sup>3</sup>/

100 strokes

0,5(0,9)

0,8(1,2)

RW =	9,0 - 12,0 mm	
Control rod ravel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 atrokes 3	mm 6

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(1a) (2s)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1270	15,2-17	,8	-		-	ca. 12	200	min.8,4	275	1,2-1,4
ca.65	11,6 4,0 1500	1265-12 1380-14 0-1,	10				275-360	275			2,9-3,4 5,8-6,0 7,9
							<b>3a</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle :	very characteristics 5e	Starting idle switchir	,	Torque- travel	Control 5
rev/min 1	cm³/1000 strokes .	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev#min	travel mm
1200	0.7 bar 151,0-153,0 (148,0-156,0)	1265-1275*	750	0,7 bar 139,0-145,0 (136,0-148,0)		105,0-125,0 (101,0-129,0)	-	-
- • d	·		LDA 500	O bar 94,0- 96,0 (91,0- 99,0				

Checking values in brackets

\* 1 mm less control rad travel than col. 2

12.85

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Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

RVI 8,8 1

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) <u>.</u>
PE 6 P RS 474 + RQVPA 425-3	0,70	0 0,20 0,16	11,9-12,0 10,7-10,8 11,0-11,7 11,1-11,3

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

2

# Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,9g 2

1. Edition

En

PES 6 P 110 A 720/3 LS 477-2 Komb.-Nr. 0 402 036 054

RQ 250/1100 PA 685-1

supersedes.

engine:

company: MAN

D 2866 UH/200 147 kW/2200 min<sup>-1</sup>

MAN-Nr.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (3, 45-3, 65) mm (from BDC) Cy1. 6

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
800	10,5+0,1	9,1-9,4	0,4(0,75)			
250	6,0-6,2	1,5-2,0	0,45(0,75	)		
	]					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PRG che rev/min 1	Control rod	Full-load s Setting po rev/min 3	•	-	cifications (4) rev/min	Idle spe Setting p rev/min 7	Control   rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod
600	15,6-16,4	600	16,0	9,5 4,0 1300	1145-1160 1200-1230 0-1,0	250	6,1	250	min.7,6 6,0-6,2 10 = 2,0	1100 500	10,7-10,8 10,7-10,9

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At 1145-1160 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting to	luel delivery
rev/min 1	cm <sup>3</sup> /~1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm 7
800	91,0-94,0 (88,5 <b>-</b> 96,5)	-	1100 500	103,0-107,0 (100,0-110,0) 81,0-85,0 (78,0-88,0)	100 250	110,0-130,0 (106,0-134,0) 15,0-20,0 (12,5-22,5)

Checking values in brackets

12.85

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 40,5 g 2

1. Edition

PE 8 P 130 A 920/5 RS 489

RSUV 300-750 P 8 A 322 R

supersedes = KHD

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7  $0 - 75 - 90 - 120 - 210 - 225 - 315 - 345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$  company BA 16 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 878 132

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			
		1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	deflection of control mm mm rev/min lever 2 3		Intermediate rated speed			Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm <sup>2</sup>  9	3 To rev/min 10	rque control Control rod travel mm
loose	800	0,3-1,0	-	_	-	ca., 26	300	5,7	750	15,0-15,
	X =	<b>4,0</b>					300	5,6-5,8	1	16,2-16,
ca. 6	3 14,0 4,0 980	790-800 815-845 0,3-1,7					300-3	50=2,0	450	15,0-15,

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat Note: changed to)		nel delivery paracteristics	Starting f	uel delivery 5	da idle stop    Control rod   travel		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	നന	
1	2	3	4	5	6	7	8	9	
on re	specifications quest. operates in m.	790-800*	-	-		-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

3.86

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung & 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 10,0 f

1. Edition

PE 5 P 100 A 720 PS 491 RQ 300/1100 PA 269-1 R Komb.-Nr. 9 400 087 329 1-2-4-5-3 je 72° ± 0,5 ° (± 0,75 °)

supersedes\_

company: Daimler-Benz

OM 355-5

200 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke	(3,45-3,65)	mm (from BDC) RW = 9,0-12,0 mm							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6				
1100	12,7+0,1	12,5-12,7	0,35(0,6							
300	8,1-8,3	1,7-2,3	0,35(0,55	)						
600	-	C, Sp. 4 u. 5	0,5 (0,7)							

#### **B.** Governor Settings

PRG che	Control rod travel		•	•	rev/min	Idle spee Setting p rev/min 7	coint Control red travel		cifications 5 Control rod travel	Torque of rev/min	Control rod travel
600	13,4-13,9	600	13,6	11,7 4,0 1350	1145-1160 1190-1220 0 - 1,5		8,1	100 300 375-4	min. 9,7 8,0-8,2 15 = 2,0	•	-
	ontrol travel ght assembly dime	nsion g <	لىرتىدىپ.	měl	Spe	اند موراند الان تحوراند	100 mg	45.99	60 min		1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control vod stop	िस्टा deliv	ery characteristics 3b	Starting fuel delivery Idle speed Control		
řev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
1100	125,0-127,0 (123,0-129,0)	- -	600	117,0-121,0 (114,5-123,5)	100	150,0-170,0 (146,0-174,0)	

Checking values in brackets

2.86

## Test Specifications Fuel Injection Fumps (A) and Governors

40

WPP 001/4 PEN 7,1 b1
1. Edition

En

PE 6 P 110 A 320 RS 492

RSV 650-750 P4/421-2

Komb.-Nr. 0 401 876 314

company Volvo-Penta engine TJD 71 G

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4-1-13

3,0-3,1 (2,95-3,15)

mm (from BOX) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,7+0,1	15,8-16,0	0,4(0,75)			
650	4,9-5,1	1,6- 2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	Control- lever deflection in degrees 7 Lower rated speed  Control- rev/min mm  rev/min mm  1 9					1( 5 )	rque control Control rod travel mm
loose	800 x =	0,3-1,0 2,25	-	<b>-</b>		ca. 32	650	6,1 6,0-6,2	-	-
ca. 37	12,7 4,0 930	750-755 775-785 0,3-1,7					660-70	ข=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	all-load stop	6 Rotational- speed limitat		rel delivery paracteristics	Starting I	uel delivery 5	4a) Idle stop		
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/100Q strokes 7	rev/min 8	Control rod travel mm	
700	158,0-160,0 (155,0-163,0)	750-755*	-	-	-	-	-	-	
					650	6,0-6,2 mm RW			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

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2

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MAN 20,9 e 4

1. Edition

<u>En</u>

PE 12 P 110 A 520 LS 838-1 Komb.-Nr. 0 401 840 089

RQ 750 PA 664

supersedes-

company: MAN

engine:

D 2542 MTE

1-5-9-8-3-4-11-10-2-6-7-12  $0-15-60-75-120-135-180-195-240-255-300-315° <math>\stackrel{+}{-}0,5°$  ( $\stackrel{+}{-}0,75°$ )

283 kW/1500

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.95-3.15)

mm (from BDC)

Cy1. 12

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
2	3	4	2	3	6
11,3+0,1	14,9-15,2	0,4(0,75)			,
3,8-4,0	1,4-2,0	0,45(0,75	)		
]					
	mm 2 11,3+0,1	travel cm <sup>3</sup> /100 strokes 2 3 11,3+0,1 14,5-15,2	travel cm <sup>3</sup> /100 strokes cm <sup>3</sup> / 2 3 4 11,3+0,1 14,S-15,2 0,4(0,75)	travel cm³/100 strokes cm³/ 100 strokes cm³/ 100 strokes mm 2 11,3+0,1 14,5-15,2 0,4(0,75)	travel cm³/100 strokes cm³/ 100 strokes cm³/ 100 strokes cm³/ 100 strokes cm³/ 100 strokes 2 3 11,3+0,1 14,5-15,2 0,4(0,75)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	g of slider	$\overline{}$	Full-load s	•	•		Idle speed regulation				Torque control		
PRG che rev/min 1	Control rod	(I)	Setting por rev/min 3	control control red travel rnm	Control red travel	cifications (4) rev/min 6	Setting previous reviews revie	Control red travel	rev/min	cifications (5) Control rod travel mm	rev/min	Control rod travel mm 12	
-	-		-	-	10,3 4,0 900	750-755 776-788 0-1,0	-	_	-	-	-	-	

Torque-control travel

Speed regulation: A750-755 min-1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	lelivery on control lever mp. 40°C (104°F)	Control rod sten	Fuel delivery characteristics			Starting for	6 Contrel	
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5		rev/min 6	cm <sup>3</sup> /1000 strokes <sub>y</sub> 7	rod travel
700	149,0-152,0 (146,5-154,5)	-	-	-		-	-	-,

Checking values in brackets

12.85

# Test Specifications Fuel Injection Pumps 1 and Governors

1. Edition

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estoil-ISO 4113

PE 12 P 110 A 920 LS 3081 Komb.-Nr. 0 401 840 703

RQV 300-1075 PA 588

supersedeg

7 50

company:KHD engine: BF 12 L 413 FC

WPP 001/4 KHD 19,0 p

1 - 4- 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12

320 kW/2150 min<sup>-1</sup>

 $0-45-60-105-120-135-180-195-240-255-300-315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

	travel	l	1 .	travel		(torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
1075	11,2+0,	1 13,0 - 13,4	0,4 (0,8)			
300	6,7-6,9	1,6 - 2,2	0,4 (0,7)	 }		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed	<del></del> -	Intermediate	rated sp	eed	Lower rated	speed		Silding s	leeve travel
	rev/min Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		1
of control lever	rod travel	mm rev/min (2a	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max <sub>c</sub>	1125	15,2-17,8		-	-	ca. 13	300	min.8,3 6,7-6,9	250 525 800	0,6-0,8 3,5-3,7 5,8-6,0
	1300	1175-1205 0-1,0				350-500		.•	1075	8,1
	<u> </u>			<u></u>		(3a)	<u> </u>			L

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

j	d stop np. 40°C (104°F) 2	limitation intermediate speed	high idle s	very characteristics 5a poeed 5b	idle switching point		Torque- travel	Control cod
rev/min	cm³/1000 strokes	rev/min	rev/min	cm-/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	Α	mm 9
LDA 1075	0,75 bar 130,0-134,0 (128,0-136,0)	1115 - 1125*	LDA 850 LDA 500	0,75 bar 129,0-133,0 (126,0-136,0) 0 bar 82,0- 84,0 (78,0- 88,0)		130,0-150,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86

**BOSCH** 

rev/min decreasing pressure – in bar gauge pressure Test at n = 500 diminution
Control rod travel-Pump/governor Setting Measurement (1) Gauge pressure = bar mm Gauge pressure = 11,2-11,3 9,2-9,3 10,4-10,5 9,6-9,8 PE 12 P..LS 3081 0,75 mit.. PA 588 0,35 0,23

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

KHD 19,0 p

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 DEE 7,6 g 3. Edition

US-PES 6 P 110 A 720 RS 3083

US-RSV 400-1050 P2/488-1

supersedes 11.85

company

John Deere

engine

6466 A 168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (3,40-3,60)

Komb.-Nr. 9 400 231 175

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1050	12,4+0,1	14,7-15,0	0,4(0,75)			
400	6,6-6,8	1,4-2,0	0,45(0,75	)		

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

(1) Uppe	er rated speed	rev/min	Intermed	diate rated	speed	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm 11
loose	800 X=	0,3-1,0	_	•	-	ca.25	400 100	6,2 min.19,0	1050 700	12,4-12,5 13,6-13,9
ca.45	11,4 4,0 1300	1095-1105 1185-1215 0,3-1,7						6,6-6,8	700	17,0217,99

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il-load stop	6 Rotational- speed limitat	(38) Fu	uel delivery paracteristics	Starting f	uel delivery 5	(4a) Idl	e stop
	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8_	Control rod trave! mm 9
LDA 1050 **	1,2 bar 146,5-149,5 144,0-152,0)	1095-1105*	LDA 700 LDA 500	1,2 bar 179,0-183,0 (176,0-186,0) 0 bar 91,0-95,0 (88,098,0)	100	156,0-176, 152 <b>,</b> 0 <b>-1</b> 80	0 400 ,0)	6,7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.86 Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. 2 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

DEE 7,6 g

-2-

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
US-PES6PRS3083	0		10,4-10,5
+US-RSVP2/488-1		0,66	12,9-13 <b>,</b> 0
		0,40	11,2-11,6

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

\*\* Setting without torque-control spring retainer at 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 11.5 mm control-rod travel.

1. Edition

PES 6 P 110 A 720 RS 3157

Komb.-Nr. 9 400 087 353

RQV 350-1300 PA 788

supersedes

company: Ford (FTO) engine: 6,6 L-TC

170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	13,0+0,1	12,5-12,7	0,5 (0,9)			
350	7,9-8,1 -	1,9-2,3	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated :	speed			intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min 3	(18) (28)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3		mm 11
	1300 12,0 4,0 1620	15,2-17 1360-13 1490-15 0 - 1,0	70 20	-	•	-	ca. 15 370-440 39	620-	min.9,5 7,9-8,1 580=2,0	500 800	0,6-1,3 2,3-2,7 4,0-4,3 5,0-5,3 7,3

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter rev/min		Rotational-speed (2b) timitation intermediate speed rev/min (4a)	high idle s	very characteristics 5a poeed 5b cm³/1000 strokes	Starting Idle switchin	ng point	Torque- travel rev/min	Control 5 Control rod travel
1	2	3	4	5	6	7	8	9
LDA 1300	0,9 bar 125,0-127,0 (123,0-129,0		LDA 600 LDA 500	0,9 bar 83,0-87,0 (81,0-89,0) 0 bar 60,0-62,0 (57,0-65,0)	100 350	100,0-120,0 ( 96,0-124,0 19,0-23,0 (16,5-25,5)		<b>.</b>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.86

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Test at n =

rev/min decreasing pressure - in bar gauge pressure

FOR 6,6 d

. 2 .

500			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 P RS3157 + RQVPA 788	0,90	0 0,65 0,53	13,0-13,1 11,4-11,5 12,4-12,6 11,8-11,9

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 FOR 6,6 e

1. Edition

PES 6 P 110 A 720 RS 3158

Komb.-Nr. 9 400 087 354

ROV 350-1300 PA 787

supersedes

company: Ford (FTO)

engine: 170 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,6+0,	11,3-11,5	0,5 (0,9)			
350	7,7-7,9	2,0-2,4	0,35(0,55	)		
				<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		, ①
of control lever	rod travel	mm rev/min (2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8	-	•	-	ca.15	100	min.9,5	350	0,6-1,3
ca. 62	10,6	1360-1370						l7,7-7,9 750 <sub>.=</sub> 2,0	500	2,3-2,7 4,0-4,3
	4,0	1470-1500					090-	/50 = 2,0		5,0-5,3
	1600	0 - 1,0				370-440			1300	7,3
						<b>3a</b>				

Torque control travel a = 0,50

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		limitation intermediate speed				fuel delivery 6	Torque- travel	control (5) Control rod travel	
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm (raver	
1	2	3	4 .	5	6	7	8	9	
1300	112,5-114,5 (110,5-116,5)	1360-1370*	500 900	73,0-77,0 (71,0-79,0) 101,0-106,0 (99,0-108,0		100,0-120,0 (96,0-124,0 = 20,0-21,0 mm RW 20,0-24,0 (17,5-26,5)		11,6+0, 12,1+0, 12,0+0,; 11,9	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.86

tsbereich KN, Kundendienst, Kfz-Ausrüstung. bert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. en République Fédérale d'Allemegne par Robert Bosch GmbH.

WPP 001/4 MB 11,0 d 1

2. Edition

En

PE 6 P 110 A 320 LS 3805-10 Komb.-Nr. 0 401 876 739

1-6-3-5-2-4

RSV 650-1150 P 1 A 820-3

Daimler-Benz

OM 421 engine 159 kW

 $0-75-120-195-240-315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDC) Cy1. 6; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
1	2	3	4	2	3	6
1180	12,1+0,1	13,0 - 13,2	0,4 (0,8)			
650	6,0-6,2	1,6 - 2,2	0,4 (0,7)			
975	-	C,Sp. 4 u. 5	0,6 (0,9)			
		•				

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

(1) Uppe	er rated speed	d rev/min	Interme	ediate ra	ted speed	4	Lowe	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-0,7	•		-	ca. 30	650	6,1	1180	12,0 -12,
	X =	4,0	3				100	min.19,5	975	12,5 -12,
ca.57	11,1 4,0 1350	1210-1220 1240-1260 0,3 ~ 1,4					650 650 - 7	6,0 -6,2 15 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat		nel delivery aracteristics	Starting (	uel delivery 5	(4a) Idi	e stop Control rod
rev/min 1	cm³/1000 strokes 2	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
1180	130,0 - 132,0 (127,5 - 134,5)		975	130,0 - 134,0 (127,0 - 137,0)	ŧ .	140,0-160, 136,0-164,		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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②

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MB 11,0 r 1

1. Edition

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PE 6 P 110 A 320 LS 3814-10 Komb.-Nr. 0 401 846 806

RQ 300/950 PA 187-12

supersede<u>s</u>

company:Daimler-Benz

engine: 0M 421 146 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke (	4,0-4,1 3.95-4,15)	mm (from BDC)	Cyl. 6;	RW = 9,0-12,0	) mm
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
950	12,5+0,1	12,2-12,4	0,4(0,8)			
300	8,3-8,5	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			
	ļ				Ţ	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che rev/min	Control rod	Full-load : Setting po rev/min	•	•	rev/min		Control red travel		cifications 5 Control rod travel mm	Torque o	Control rod (3)   Control rod   (12)
600	13,8-14,6	600	14,2	11,5 4,0 1200	995-1010 1045-1075 0-1,5	300	8,4	100	min. 9,9 8,3-8,5	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At 995-1010 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	telivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics (3b)	Starting f	ruel delivery 6
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes;/ mm
950	122,0-124,0 (119,5-126,5)	600	600	114,0-118,0 (111,0-121,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

12.85

WPP 001/4 MB 11.0 q 5

1. Edition

PE 6 P 120 A 320 LS 3815-10

RQ 300/1150 PA 511-4

1-6-3-5-2-4

 $0-75-120-195-240-315^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company:Daimler-Benz engine: OM 421 A 184 kW

Komb.-Nr. 0 401 846 812

All test specifications are valid for Sosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC) CV] 6

Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
10,4+0,	1 15,8-16,0	0,5(0,9)			
5,0-5,2	1,4-2,0	0,8(1,2)			
-	C, Sp. 4 u. 5	0,8(1,2)		·	
	mm 2 10,4+0,	travel cm <sup>3</sup> /100 strokes 3 10,4+0,1 15,8-16,0 5,0-5,2 1,4-2,0	travet mm cm³/100 strokes 2 cm³/ 100 strokes 4 cm³/ 100 strokes 4 10,4+0,1 15,8-16,0 0,5(0,9) 5,0-5,2 1,4-2,0 0,8(1,2)	travel cm <sup>3</sup> /100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm <sup>3</sup> / 100 strokes cm 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Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checking PRG check		Full-load s Setting po	•	-	cifications (4)	Idle spec	•		cifications (5)	Torque o		3)
	Control rod ravel		Control rad travel mm 4	Control red travel rnm -	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel	
	19,1-20,8 max. 46°	600	20,0	9,4 4,0 1360	1195-1210 1250-1280 0-1,5		5,1	100 300 360-	min.6,7 5,0-5,2 390 = 2,0	-	-	

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At 195-1210 min<sup>-1</sup>

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting t	ruel delivery
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	cm <sup>3</sup> /1000 strokes / mm
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	•	LDA 600 LDA 500	0,7 bar 157,0-163,0 (154,0-166,0) 0 bar 139,0-142,0 (136,0-145,0)	100	140,0-160,0 (136,0-164,0)

Checking values in brackets

12.85

MB 11,0 q 5

- 2 -

Test at n =

500 rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 PLS 3815-10 + RQPA 511-4	0,70	0 0,34	10,4-10,5 10,1-10,3 10,3-10,4

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MAN 17.4 c

2. Edition

PE 10 P 120 A 520/4 LS 3833 RO 750 PA 663-7 1-8-7-6-3-5-2-10-9-4

 $0-27-72-99-144-171-216-243-288-315^{\circ}+0.5^{\circ}(+0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 MAN-Nr. 2-7666

supersedes 9.85

D 2540 LE 352 kW

Komb.-NR. 0 401 849 721

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(4.15-4.35)

mm (from BDC) Cy1.10; RW = 9.0 - 12.0 mm

		(4,13-4,33)				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Differance cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,0+0,1	22,9 - 23,1	0,5 (0,9			
300	6,1-6,3	1,4 - 2,0	0,8 (1,2			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin	g of slider ck	1	Full-load s			$\sim$	ldle spec Setting p			cifications (5)	Torque d	(3)
rev/min	Control rod travel mm 2		rev/min 3	control red travel rnm 4	Central red travel rnm · 5	rev/min	rev/min 7	Control red travel rnm 8	rev/min 9	Control rod travel mm	rev/min	travel
-	-		-	•	12,3 4,0 950	750-755 790-803 0 -1,0	-	-	-	-	-	<u>-</u>

Torque-control travel on flyweight assembly dimension a

750 - 755 min-1

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delivery chara	cteristics (3b)	Starting for spee	uel delivery d (6)
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min cm <sup>3</sup> /-10	000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
700	229,0 - 231,0 (226,0 - 234,0)	•	-	•	-	-

Checking values in brackets

12.85

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

2. Edition

PE 6 P 120 A 320 RS 7103 Komb.-Nr. 0 402 746 801

RQV 200-1100 PA 712

supersedes 5.85

company: -

Saab-Scania

Values only apply to test nozzle-and-holder assembly

DSC 901

1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (4.45-4.65)

mm (from BDC) RW 6,0 - 8,0 mm

<u>ک</u>

Rotational speed rev/min 1	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 st <del>rokes</del> 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,5+0,1	17,8 - 18,0	0,7(1,0)			3,3 <u>+</u> 0,1
225	4,6-4,8	1,5 - 1,9	0,3(0,6)			(3,0 - 3,5) **

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Clidina	toous trough
deflection of control	rev/min Control rod travel mm	Control rod travel mm rev/min	(b) (28)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	deeve travel
1	2	3	$\overline{}$	4	5	6	7	8	9	10	11
max.	1140	15,2-17	,8	-	-	-	ca. 8	100	min.6,1	225	0,8-0,9
ca.63	11,5 4,0 1450	1290-13						225 290-	4,6-4,8 350=2,0	350 420 550 1140	2,2-3,1 3,6-4,5 4,9-5,1 8,6-8,7
							<b>3</b> a				-,,.

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo net lic tset		intermediate speed	high idle s	very characteristics 5a	Starting idle switching	$\mathbf{O}$	Torque- travel	Control 5
rev/min	cm³/1000 strokes .	rev/min. 4e	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	trave! mm
1	2	3	4	5	6	7	8	9
LDA <b>7</b> 00	0,9 bar 178,0-180, (175,0-183,0		LDA 1100 LDA 500	0,9 bar 177,0-185,0 (175,0-187,0 0 bar 138,0-142,0 (136,0-144,0	)	240,0-290,0 =20,0-21,0 mm RW	<b>-</b>	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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SCA 9,0 c

- 2 -

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE 6 P RS 7103 + RQV PA 712	0,90	0 0,435 0,335	12,5 - 12,6 10,2 - 10,5 11,9 - 12,0 10,6 - 10,8

Notes

(1) when n =

rev/min and

bar (= maximum full-load control rod travel)

#### SUPPLEMENTARY INFORMATION

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-J-400/116
- For sealing, see VDT-J-400/117
- Test specifications approved by Scania on 4.10.1984
- Start of fuel delivery-engine: 15° v. OT
- Firing sequence, engine : 1-5-3-6-2-4
- \*\* Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted 70 2,9 3,1 mm.

## **Test Specifications** Fuel Injection Pumps 1 and Governors

1. Edition

PE 6 P 130 A 720 RS 7112

ROV 350/900 PA 760

WPP 001/4 Gts 18,0 d

Komb.-Nr. 0 402 046 826

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company Guascor engine: F 180 T, TA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

RW = 9,0-12,0 mmPort closing at prestroke mm (from BDC) 4,35-4,55Spring pre-tensioning (torque-control valve) Rotational speed Control rod **Fuel delivery** Difference **Control rod Fuel delivery** cm³/ cm<sup>3</sup>/100 strokes cm<sup>3</sup>/100 strokes 100 strokes rev/min mm mm mm 900 29,9-30,2 0.6 (1.0 3,3+0,1 350 5,2-5,4 2,4-3,0 1,0 (1,4)

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Stiding s	leeve travel
Degree of deflection of control	rev/min Control	Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever	rod travel	rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	940	15,2-17,8	-	<b>-</b> .	-	ca. 12		min.6,8	300	0,9-1,2
ca. 62	12,3 4,0 1150	940-950 1005-1035 0 - 1,0					350	5,2-5,4	700 900	4,7-5,2 7,7
		.,,				355-455 39				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5a)	Starting Idle switching	. 0	Torque-	control 5
rev/min	cm³/1000 strokes	rev/min 4e	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
900	299,0-302,0 (295,5-305,5		-	. •	- 350	- 24,0-30,0 (20,0-34,0)	-	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.85

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## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a 1

1. Edition

PE 6 ZW 120/400 RS 27/2

PE 6 ZW 120/410/3 RS 28/2

RQUV 300-750 ZW 31

Replaces -Firm: MTU

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ} + 0.5^{\circ} (+ 0.75^{\circ})$ 

Engine: MMB 820

VDT-W-400/305 and instructions P. 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke

2,0-2,1

mm (from BDC)

Cy1. 1

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600	6,0	79,0- 99,0	11,0(16,0)	75,0-103,0	
250	6,0	40,0-56,0		36,0-60,0	
			e		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rai	ed spee	d	Torqu	e control
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-1 10	Control- rod travel mm
ca. 85	750 775 800 840 865	21,5-23,5 13,0-18,0 5,0-12,0 0- 3,0 0	•	-	<b>-</b>	ca. 1	325 350 400 540	11,0-13, 7,6- 8, 5,0- 6, 4,8 3,3-4,3	0 2	-

Torque control travel a -

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	nd delivery ernor control lever il temperature 40°)	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min-1	cm <sup>3</sup> /1000 strokes 2	min-1 3	min-1 4	cm³/1000 strokes 5	min-1 6	cm³/1000 strokes 7	
-	not known	-	_	-	-	-	
					s		

Checking values in brackets

2.86

BOSCH

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#### Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the O dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm<sub>2</sub>/1000 strokes or less than 332.0 cm<sub>2</sub>/1000 strokes.

#### Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a 2

1. Edition

PE 6 ZW 120/400 RS 54/2 RQUV 300-750 ZWA 31 L

Replaces - MT

1 - 5 - 3 - 6-2 - 4 je  $60^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Engine: MMB 820

VDT-W-400/305 and instructions P. 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke

2.0-2.1

nm (from BDC

Cyl.

Port closing a	it prestroke	2,0-2,1	mm (from BDC)	Oy 1 • 1	
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
i	2	3	4	5	
600	18,0	336,0-342,0	10,0(15,0)	333,0-345,0	
600	6,0	79,0-99,0	11,0(16,0)	75,0-103,0	
250	6,0	40,0- 56,0	10,0(15,0)	36,0-60,0	
		Į			
			<u> </u>	<u> </u>	<u>l</u>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ited spe	ed	Lower rat	ed spee	d	Torque control	
Control lever deflection degrees 1	mm min-1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control , lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min ' 10	Control- rod travel mm 11
ca. 85	750 775 800 840 865	21,5-23,5 13,0-18,0 5,0-12,0 0- 3,0 0	-	-	-	ca. 19	270 300 325 350 400 540	11,0-13, 7,6- 8, 5,0- 6, 4,8 3,3- 4,	<u>0</u> 2	-

Torque control travel a --

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	nd delivery ernor control lever il temperature 40°)	Control rod stop at speed	Fuel-de charact			Starting fuel delivery		
min-1 1	cm <sup>3</sup> /1000 strokes 2	min-1 3	min-1 4	cm³/1000 strokes 5	min-1	cm³/1000 strokes 7		
-	not known	-	-	-	-	-		

Checking values in brackets

2.86

**BOSCH** 

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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#### Pump:

Furthermore, the customer requests that the control-rod projection at control-rod travel 0 mm be stamped into these pumps on the shutoff and max. delivery ends at the pump housing. These dimensions which must be stamped are measured as follows:

Set control-rod travel 18 mm (setting point of pump) with locking device, measure the projection of the control-rod end face at pump end 2, subtract 18 mm from the dimension measured; measure the projection of the control rod with mounted fork-shaped piece at pump end 1, add 18 mm to the dimension measured. Stamp these dimensions measured on the pump housing on the front side above the spring-compartment lid (dimension measured for pump end 1 near plunger-and-barrel assembly 1, and the dimension of pump end 2 near assembly 6). Size of the figures approx. 5 - 6 mm.

After removal of the locking device, with the control rod at shutoff position, the O dimension measured at pump end 2 must be obtained or fallen below!

In the case of pumps with a governor, measure and stamp in only the dimension at the drive end.

No plunger-and-barrel assembly must deliver more than 346.0 cm<sub>2</sub>/1000 strokes or less than 332.0 cm<sub>2</sub>/1000 strokes.

#### Governor:

The lower idle spring must be supported from beneath between its spring seats, and if necessary also the center spring under the outer spring seat, so that the governor values are obtained!

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c 1

3. Edition

PE 12 ZW 150/120 RS 1029

ROV 300-1200 ZWA 51 R

Replaces9.85 Firm: MTU

Komb.-Nr. 0 402 430 012

Engine: 12 V 331

Note VDT-W-Allq./7!

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	it prestroke	(2,45-2,65)	mm (from BDC)	Cy1. 12	
ctational speed min-1 1	Control- Fuel delivery rod travel Average value mm cm³/1000 strokes 2 3		Difference in fuel delivery cm <sup>3</sup> /1000 strokes 4	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
1000 600 300	18,0 9,0 9,0	501,0-511,0 110,0-130,0 46,0-72,0	15,0 (22,0) 15,0 (22,0) 10,0 (15,0)	498,0-514,0 107,0-133,0 43,0-75,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spe	ed	Lower rat	ed spee	d	Torqu	e control
Control lever deflection degrees	mm min~1 2	Control- rod travel mm min-1 3	Control lever flection degrees 4	min-1 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min-1 8	Control- rod travel mm 9	min-1	Control- rod travel mm 11
ca. 84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	<u> </u>	-
ca. 84		18,0-19,0 1205 -1225 1320-1380 0 - 2,0	(max.30)	300 500	14,3-17, 10,3-11, 2,5-3,7 720 = 0	₿	200 400 485-	10,8-14, 3,9-5,0 590 = 0	2	

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

ivery control lever perature 40°)	Control rod stop at speed			Starting fuel delivery		
/1000 strokes	min-1 3 Idle stop	min-1 4	cm³/1000 strokes 5	min-1 6	cm <sup>3</sup> /1000 strokes 7	
ot known	300 RW = 8,0 mm	-	-			
	control lever perature 40°) /1000 strokes	control lever perature 40°)  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes	control lever perature 40°)  /1000 strokes	control lever perature 40°)  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes  /1000 strokes	control lever perature 40°)  /1000 strokes	

Checking values in brackets

12.85

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## **Test Specifications** Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4c 2

4. Edition

VA 3/100 H 1100 CR 9-3 CR 9-4

supersedes 3.76

IHC company:

engine:

D 155 X 36 D 155-E 453

DHK 1688 901 020

All test specifications are valid for **Bosch Fuel Injection Pump Test Benches** 

900-1050

700

and Testers **Test Intructions and Test Equipment** 

Pre-stroke setting

2. Test Specifications

2.1 Timing device rev/min

 $0.3 \text{ nm} \pm 0.04$ 

**VDT-WPP 161/4 B** Pre-setting see reverse side

plunger lift of 1.0 mm related to outlet "A".

1. Settings	rev/min	Settings	Ì	Charge-air press. kp/cm²	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3, 2-4, 0 n	nm		
1.2 Supply pump pressure	700	4,3-4,8 k	p/cm²		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0 c	m <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure		c	m <sup>3</sup> /1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0 c	m³/1000 strokes		3,0
1.5 Start 196 bar	100	min .90,0 c	m <sup>3</sup> /1000 strokes		) 1
1.6 Full-load speed regulation	1150	31,0-39,0 c	m³/1000 strokes		

400

Checking values in brackets

	mm		0,9-1,9	(0,6-2,2) (2,	9-4,3) 4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min kp/cm²	200 1,8-2,3(1,6-	-2,5)		700 1100 1-5,0) 5,8-6,3(5,6-6,5)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100(40-1	110)		1100 55-100(40-110)
2.3 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		1150		(30,0-40,0)	
:		1080 800 500	İ	(64,5-69,5) (62,5-64,5) (54,0-59,0)	
	Stor	1100	0		+- F
Idle stop	Full	430-500	0		
		300		(16,0-24,0)	
	Start	100	min .90,0		
end stop		220-300	min.95,0		

Angle to the stop-plate	Pre-setting dimensions
Pump  a = 25 ± 40  b = 45 ± 80  v = 30 - 80  b = 60 + 80	Pump Dimension ¥ 6,5 mm Dimension ★ 25,0 mm

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 16,0 c 1 2. Edition

En

PE 12 AM 80 C 610 RS 2005

RQV 200-1150 AB 479 DL

supersedes 4.85 company: KHD

noine:

F 12 L 714 A

$$1 - 4 - 9 - 8 - 5 - 2 - 11 - 10 - 3 - 6 - 7 - 12$$
  
 $0 - 15 - 60 - 75 - 120 - 135 - 180 - 195 - 240 - 255 - 300 - 315 - 0,5° (-0,75°)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Bench59 and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2, 15-2, 25 mm (from BDC (2, 10-2, 30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Ofference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	7,4 - 7,8	0,4			
1000	9,0	3,9 - 4,7	1			
1000	15.,0	10,3 - 11,4	]			
200	9,0	2,8 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection of control	rev/min Control rod travel mm 2	Control roci (la travel mm rev/min (28	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
ca.66		15,0-18,0 11,8-15,5 5,5-10,6 0-6,0		•	<u>-</u>	ca.10	100 200 300	7,0-7,6 4,3-6,6 2,6-3,4 1,2-2,6	1150	8,3
		· · · · · · · · · · · · · · · · · · ·				<b>3a</b>				

Torque control travel a = 1,5 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2) rev/min cm³/1000 strokes		Rotational-speed 2b limitation intermediate speed rev/min 4a	1.		Starting idle switchin	ng point	Torque-control ( travel Control r travel rev/min mm	
1130	71,5-73,5 (70,5-74,5)	3 1160-1180 *	600 800	74,0-77,0 (72,5-78,5) 75,5-78,5 (74,6-80,0)	100	min. 99,0	800 600	0 0,3-0,5 0,7-0,9 1,2-1,4 1,4-1,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

BOSCH

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WPP 001/4 BMW 2,4b

2. Edition

supersedes 7.84

company: BMW-USA Ford M 21 D 24

DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test

Test Instructions and Test Equipment

VE 6/10 F 2400 R 118

DHK 1 688 901 022

0 460 406 025

Testoil-ISO 4113

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery without	1500	40,5-41,5	cm <sup>3</sup> /1000 strokes	1,050	max. 3,0
charge-air pressure Full-load delivery with	500**	22,0-23,0	cm <sup>3</sup> /1000 strokes	0	max. 3,0
charge-air pressure  1.4 Idle speed regulation	400**	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	
1.5 Start	-2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Full-load speed regulation	250**	35,0-37,0	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent start of delivery	-				

2. Test Spec	ifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	400 3,8-4,6(3,5-4,9)	1500 (6,0-7,4)	1500** 0 8,	2000 2-9,0(7,9-9,3
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 4,4-5,0		2300 7,2-7,8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 42-83(27-98)		2400 55-138(40-	153)
2.3 Fuel deliveries	L			3. Dimen	SIONS for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery   cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgt/cm²)	Designation	mm
End stop	2700 2600 2400 1500 750* 500**	7,0-13,0 (6,0-14,0) (16,0-24,0) 40,5-42,5 (39,2-43,8) (38,7-43,3) 31,5-32,5 (29,0-35,0) (19,5-25,5)	3)   1,050   3)   0,5	K KF MS SVS	3,2-3,4 6,3-6,6 1,4-1,6 3,0
switch-off				A B	
Idle stop  khaust gas reculation driver tart Inspection bint imit stop	850***	(4,0-12,0 max. 3,0 16,0-18,0(15,0-19,0 27,0-37,0(20,0-42,0 28,0-38,0(25,0-41,0 19,2-23,8(16,5-26,0	0) 0) 0)	** Supply the so	roke 7,5 mm 12 volts to lenoid valve ment point
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V.			

**BOSCH** 

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.

WPP 001/4 SCL 9,5 a

2. Edition

supersede5.77

company: Schlüter

engine: SDM 110 W8 (1) SDMT 110 W8 (2)

EP/RSV 250-1025 A1 B778DL (2)

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je  $45^{\circ}$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

PE 8 A 85  $_{\rm D}^{\rm C}$  410 RS2281 EP/RSV 250-1100 A1 B524DL (1)

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 mm (from BDC

Rotational speed rev/min	Control rod travel mm	Fuel delivery  "C"  cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  "D"  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,1 - 5,5	0,4	9	4,2 - 4,5	
	6 15	1,3 - 2,1 12,1 - 13,2	] -	6 -	0,7 - 1,4	
200	6	0,1 - 0,9		9	1,4 - 2,2	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

#### 524DL

Degree of deflection of control	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	ced Control rod travel mm	4 Lower Degree of deflection of control lever 7	rated spe rev/min 8	ed Control rod travel mm 9		que control Control rod travel mm
ca.50	1100 1130 1150	12,0 8,0 5,0	withou	t auxi	liary spr	ca.20 ing	250 150 250	5,5 19 - 21 5,2-5,8		0 0,6-0,8
5	1120 1150 1250	8,0-10,6 3,5-6,0 0,3-1,0	with a	uxilia	ry spring		350 540	3,1-4,1 0-1	350	0,9-1,1

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-los	ad stop	6 Rotational- speed limitat.	(3a) Fuel delivery characteristics Starting fuel delivery idle		fuel delivery	(5a) Idle stop		
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: Changed to rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	rev/min cm³/1000 střokes 6 7		Control rod traval mm 9
1100	68, 5 - 70, 5	1120			100	ca.20mmRW	250	5,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

Festoil-ISO 4113

### **B. Governor Settings**

1 Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control tever	rated spe rev/min 5	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	3 Tor	que control Control rod travel mm
ca.51	1025 1050 1080	12,0 8,4 3,6	without	auxi	liary spri	ca.20 ng	250 100 250	5,5 19 - 21 5,2-5,8	1000	0 0,9-1,1
(5)	1040 1100 1200	9,0-10,4 2,2-3,7 0,3-1,0	with au	ıxilia	ry spring		350 520	2,8-4,0 0 - 1		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	oad stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting Idle	fuel delivery	Sa Idi	e stop
lest oil tem rev/min 1	p. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3			rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1025	78,5 - 80,5	1065-1075*	700 500	83,5 - 86,5 75,0 - 78,0	100	ca.20mmRW	250	5,5
			69					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

(1) Upper	rated speed	<u> </u>	Intermediate	rated spe	ed	(4) Lowe	r rated sp	eed	(3) Tor	que control
Degree of deflection of control		Control rod travel	Degree of deflection of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
lever 1	rev/min 2	mm 3	lever 4	5	6	7	8	9	10	11
				<u></u>						
										ļ
			Ì							
5										

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting Idle	fuel delivery	Sa) Idle	stop
Test oil tem rev/min 1	Test oil temp. 40°C (104°F) Noticha rev/min cm³/1000 strokes 1 2 3		rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	1	Control rod travel mm 9

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0p2

1. Edition

En

PES 4 M 55 C 320 RS 152-1 RSF 360/2300 M 59 0 400 074 954 1 - 3 - 4 - 2 0 -90 -180-270

supersedes...

company Daimler Benz

OM 601

53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15)

mm (from BDC)

20-22

Note: Before starting testing, observe the

Control rod travel important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm.	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rate	d spee	ed		Variations in co	ntrol rod trav	/el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control		Control rod ravel	Rotational speed	1	Rotational speed	Control rod travel
lever	mm	rev/min	lever	1	nm	rev/min	ł	rev/min	mm
1	2	3	4	5	;	6	7	8	9
$\sim$	min.9,5 5,4-5,6 4,2-4,4	335	50 (		0,3-10, ,8-8,2	5 2200 2500	(12) (13) (14)	100 1800 1000	min. 20,1 10,8-11,0 11,1-11,2
<b>(4)</b> (5)	1,5	590-690			0-1,0	2950	· ⑥	Switching p	oint

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o		Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting f	uel delivery	
Test oil te	mp. 40°C (104°F)			(18)	ł		Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100 335	min. 55 5,0-6,0 (4,5-9,0)	6,0 (2a) 1,0 (1,5)
· ;			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0)Point 8 a 16

Checking values in brackets

\*ca. 2,6 less control rod travel than in Column 2

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335\,\text{min}^{-1}$  and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- B. Checking the ELR servo magnet
  - Control lever up against idle stop At n=360 l/min, I=1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance — replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 l/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,0 p3

1. Edition

En

supersedes...

company Daimler Benz

ngine: 0M 601 53 kW

PES 4 M 55 C 320 RS 152-1 RSF 360/2300 M 59-1 0 400 074 952 1- 3- 4- 2 0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2, 1

2,00-2,10 (1,95-2,15)

mm (from BDC)

20-22

testing, observe the Control rod travel important instruc-

verimportant instructions on the reverse.

Note: Before starting

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			
	<u> </u>			<u>.                                    </u>		

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated s	peed		Upper rated s	peed		Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	rev/min	i	rev/min	mm	
1	2	3	4	5	6	7	8	9	
13-17 ①	min.9,5	225	50 (7	10,3-10	5 2200	(12)	100	min. 20,1	
(2)	5,4-5,6	335	l (8	7,8-8,2	2500	(13)	1800	10,8-11,0	
(3)	م ما		🥳	3 '		(14)	1000	11,1-11,2	
<b>(</b> 4	) -		1 (10	0-1,0	2950				
(5)	1,5	590-690				(6)	Switching po	oint	
<u>U</u>	<b>′</b>	1	1	<b>'</b>			1		

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d		Full-load speed (8a) regulation	Variations delivery	in fuel 17	Starting f	uel delivery	
Test oil ter	mp. 40°C (104°F)	ļ		] (18)			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100 335	min. 55 5,0-6,0 (4,5-9,0)	6,0 (2a) 1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See <sup>15</sup> (3,0)Point 8 a <sup>16</sup>

Checking values in brackets

\*Ca. 2,6 less control rod travel than in Column 2

BOSCH

44.0

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 l/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff\_box

Control lever up against idle stop. At  $n=335~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 f1

2. Edition

En

supersedes company

engine

3.85 Daimler-Benz OM 601

54 kW USA

1- 3- 4- 2 0-90-180-270

PES 4 M 55 C 320 RS 152-1

RSF 360/2300 M 60

0 400 074 950

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1.95-2.15) mm (from BDC)

20-22

Note: Before starting testing, observe the Control rod travel important instruc-

tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12,1+0,1	3,4-3,5	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			
			•			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	peed		Upper rated	speed		Variations in co	ntrol rod trav	el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
8-12 (1	min.9,5	225	50 (7	11,3-11	5 2200	(12)	100	min. 20,1
2	5,4-5,6			5,9-7,3		(13)	1800	11,7-11,9
(3)			l ≻	5		(14)	1000	12,1-12,2
)4	\ -		}	o-1,0	2950			
(5)	1,5	590-690	>	3		(6)	Switching p	oint
હ	'		1	기				

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	Selivery (19)	Full-load speed 8a regulation	Variations delivery		Starting fo	uel delivery	
Test oil ter	mp. 40°C (104°F)		1	(18)	1		Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	36,0-38,0 (35,0-39,0)	2500*	1800 1000	36,0-37,5 (35,0-38,5) 34,0-35,0 (33,0-36,0)	100 335 2500	min. 55 5,0-6,0 (4,5-9,0) 14,0-19,0 (13,0-20,0)	6,0 (12a) 1,0 (1,5) 2,5 See (3,0) Point 8 a (16)

Checking values in brackets

\*ca.3,2 mm less control rod travel than in Column 2

11.85

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4,1-4,5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 0,9-1,0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 48.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 360 l/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

#### 9. Checking the governor with ADA pressure unit

Speed	Pressure (absolute)	Control-rod travel deduction from
Speed in-1	mbar	max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

10. Pin projection =  $16.65 \pm 0.05$  mm

240

Testoil-ISO 4113

# **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 2,0 p

1. Edition

PES 4 M 55 C 320 RS 152-3 RSF 360/2300 M 59-6

0 400 074 930

1-3-4-2

0- 90-180-270

supersedes\_

company Daimler Benz

OM 601 53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

testing, observe the

Note: Before starting

Control rod travel important instrucmm (from BDC) 2,00-2,10 tions on the reverse. (1,95-2,15)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			
	1	1				J

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated speed			Upper rate	Upper rated speed				Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	- 1	Control rod travel	Rotational speed		Rotational speed	Control rod travel		
lever	mm	rev/min	lever	ı	mm	rev/min	1	rev/min	mm		
1	2	3	4	1	5	6	7	8	9		
13-17 (1)	min.9,5	225	50	(7)	10,3-10	5 2200	(12)	100	min. 20,1		
(2)	5,4-5,6	335		(B)	7,8-8,2	2500	(13)	1800	10,8-11,0		
<u> </u>	4,2-4,4	400**	İ	<u>തി</u>	-		(14)	1000	11,1-11,2		
$\stackrel{\smile}{\triangleleft}$	-			<b>画</b>	0-1,0	2950			Ī		
(5)	1,5	590-690		(m)			(6)	Switching p	oint		

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19)	Full-load speed (8a regulation	Variations delivery	in fuel 17	Starting f	uel delivery	
Test oil ten	np. 40°C (104°F)			(18)		1	Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100 335	min. 55 5,0-6,0 (4,5-9,0)	6,0 (2a) 1,0 (1,5)
		·	1000	31,0-32,0 (30,0-33,0)	250 <u>0</u>	22.0-26.0	2,5 See (3,0)Point 8 a 16

Checking values in brackets

\*Ca. 2,6 less control rod travel than in Column 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 l/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335 \, \text{min}^{-1}$  and  $pu=450 \, \text{mbar}$  control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop
    At n = 360 1/min, I = 1.8 A, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

Testoil-ISO 4113

# **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 2,0 p1

1. Edition

En

supersedes \_

company Daimler Benz OM 601 engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

PES 4 M 55 C 320 RS 152-3

RSF 360/2300 M 59-7

0 400 074 932 1 - 3- 4- 2 0 -90- 180-270

Port closing at prestroke

2,00-2,10 (1.95-2.15) mm (from BDC)

testing, observe the Control rod travel important instruc-

tions on the reverse.

Note: Before starting

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm .	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25(0,3)			
335	5,4-5,6	0,5-0,6	0,1(0,15)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated spe	Lower rated speed			eed		Variations in control rod travel			
	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm	
1	2	3	4	5	6	7	8	9	
2	min.9,5 5,4-5,6 4,2-4,4 - 1,5	335	50 7 8 9 10 (1	10,3-10 7,8-8,2 - 0-1,0	ſ	(12) (13) (14) (6)	100 1800 1000 Switching po	min. 20,1 10,8-11,0 11,1-11,2	

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting f	uel delivery	
Test oil ter	пр. 40°С (104°F) 1			<b>1 18</b>			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100 335	min. 55 5,0-6,0 (4,5-9,0)	6,0 (2a) 1,0 (1,5)
			1000	31,0-32,0 (30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	2,5 See (3,0) Points 8 a

Checking values in brackets

\*ca. 2,6 less control rod travel than in Column 2



- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 1/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop
    At n = 360 1/min, I = 1.8 Å, control-rod travel = (12,0-13,4) mm, fuel delivery (31,0-38.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance — replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, 1 = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 2,5 a1

1. Edition

En

Testoil-ISO 4113

PES 5M 55c 320 RS 153 RSF 350/2300 M 55-6 0 400 075 978

1 - 2 - 4 - 5 - 3 je 72°

supersedes
company: Daimler-Benz
engine: OM 602
66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,10 (1,95-2,15)

mm (from BDC)

20-22

Note: Before starting testing, observe the

Control rod travel important instructions on the reverse.

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
2	3	4	2	3	6
11,3+0,1	3,15-3,25	0,25(0,3)			
10,9+0,2		0,1 (0,15) 0,25(0,3) 0,25(0,3)			
	travel mm 2 11,3+0,1 5,4-5,6 10,9+0,2	travel mm cm³/100 strokes 2 3	travel mm cm³/100 strokes 2 cm³/100 strokes 4 11,3+0,1 3,15-3,25 0,25(0,3) 5,4-5,6 0,1 (0,15) 0,9+0,2 0,25(0,3)	travel mm cm³/100 strokes 2	travel mm cm³/100 strokes 2 cm³/100 strokes 4 cm³/100 strokes 2 3 11,3+0,1 3,15-3,25 0,25(0,3) 0,1 (0,15) 0,25(0,3)

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated sp	eed		Variations in co	ntrol ioc lav	el
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed rev/min	Control rod travel
1	2	3	4	5	6	7	8	9
	min.10,0 5,4-5,6 4,2-4,4 - 1,5	350	50 (7) (8) (9) (1)	11,3+0, 7,8-8,2 0-1,0		(2) (3) (4) (6)		min.20,1 10,9-11,1 10,6-10,8

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)		Variations delivery	in fuel 17	Starting f	uel delivery	<del>,-,</del>	
Test oil le	mp. 40°C (104°F)		1	1 18			Difference	İ
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	s
1	2	3	4	5	6	7	8	
2200	33,5-35,5 (32,5-36,5)	2500 <b>*</b> 7,8-8,2	1800	34,0-35,0 (33,0-36,5)	100	min. 55,0	6,0	128
		mm RW	1000	31,5-32,5 (30,5-33,5)	350	5,0-6,0 (4,5-9,0)	1,0 (	15)
					2500	22,0-26,0 (21,0-27,0)	2.5	16

Checking values in brackets

\*ca.2,3 less control rod travel than in Column 2

12.85

BOSCH

Geschäftsbereich KM, Kundendienst. Kfz-Ausrüstung.
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 l/min control-rod travel (4,1-4,6 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=350 \text{ min}^{-1}$  and pu=450 mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. Setting the idle control-rod travel at PLA box

Loosen correction nut when doing this.

8. Checking the pneumatic idle increase (PLA)

At 0.4 bar vacuum n = 400 l/min, control-rod travel = (4,0-5,6 mm) delivery = (5,0-13,0 ccm/1000 strokes).

9. Leak test (vacuum test) on PLA box

Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.

10. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

# **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 2,5 e

1. Edition

PES 5 M 55 C 320 RS 153 Testoil-ISO 4113 RSF 340/2300 M 59-4 0 400 075 982 1-2-4-5-3 0-72-144-216-288

supersedes

company Daimler-Benz OM 602 engine: 66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Note: Before starting testing, observe the important instruc-

Port closing at prestroke

2,00-2,10 (1,95-2,15) 20-22

En

Control rod travel tions on the reverse.

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
2	3 .	4	2	3	6
11,3+0,1	3,15-3,25	0,25 (0,3)			
5,4-5,6	0,5-0,6	0,1 (0,15)			
		0,25 (0,3)			
1		0,25 (0,3)			
	travel mm 2 11,3+0,1	travel mm cm³/100 strokes 2 3 11,3+0,1 3,15-3,25	travel mm cm³/100 strokes 2 3 cm³/100 strokes 4 11,3+0,1 3,15-3,25 0,25 (0,3) 5,4-5,6 0,5-0,6 0,1 (0,15) 0,25 (0,3)	travel   travel   travel   travel     travel     travel	travel mm cm³/100 strokes 2 cm³/100 strokes 2 mm cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 3 cm³/100 strokes 2 3 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strokes 2 cm³/100 strok

mm (from BDC)

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated s	peed		Upper rated speed				Variations in c	ontrol rod trav	/el
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	١,	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever		mm	rev/min		rev/min	mm
1	2	3	4		5	6	7	8	9 2
13-17 ①	min.8,0	220	50	7	11,3+0,1	1000	(12)	100	min. 20,1
(2)	5,4-5,6	315	ł	(8)	7,8-8,2	2500	(13)	1800	10,9-11,1
<u>(3</u>	4,2-4,4	380**		(9)	_		(14)	1	10,6-10,8
<b>∠</b>	-			(iii)	0-1,0	2950			10,0-10,0
$\searrow$	1,5	630-730	l	$\boldsymbol{\varkappa}$			• ~	Switching p	oint
(5)	,,,,	030-730	Ì	(1)			6	)	

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)		Variations delivery	in fuel (17)	Starting f	uel delivery		
Test oil ter	mp. 40°C (104°F)			1 18			Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	.
1	2	3	4	5	6	7	8	
2200	33,5-35,5 (32,5-36,5)	2500*	1800 1000	34,0-35,5 (33,0-36,5) 31,5-32,5 (30,5-33,5)	100 315 2500	min. 55,0 5,0-6,0 (4,5-9,0) 22,0-26,0 (21,0-27,0)	1,0 (1,5) 2,5 (3,0)	2a) 15) 16)

Checking values in brackets

\*Ca.2.8 less control rod travel than in Column 2

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 380 1/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=315~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 340 l/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance – replace the servo magnet.  $\frac{1}{2}$ 

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 l/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 2,5 d

En

1. Edition

PES 5 M 55 C 320 RS 153 RSF 340/2300 M 59-8 0 400 075 979 1-2-4-5-3 0-72-144-216-288

supersedes \_

Daimler-Benz company:

OM 602 engine 66 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Note: Before starting testing, observe the

Control rod travelimportant instruc-

2,00-2,10 mm (from BDC) Port closing at prestroke

(1,95-2,15)

20-22

tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
315	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800	,		0,25 (0,3)	:		
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated speed				Variations in co	ntrol rod trav	el .
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control		Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	ļ	mm	rev/min-		rev/min	mm
1	2	3	4		5	6	7	8	9
2	min.8,0 5,4-5,6 4,2-4,4 - 1,5	315	50	$\sim$ 1.	11,3+0,1 7,8-8,2 - 0-1,0	1000 2500 2950	(12) (13) (14)	I IOUU	min. 20,1 10,9-11,1 10,6-10,8

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	,	Full-load speed 8a regulation	Variations delivery	[47]	Starting f	uel delivery	
Test oil ter rev/min 1	mp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	rev/min	rev/min 4	. (18) cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	Difference cm <sup>3</sup> /1000 strokes 8
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5) 31,5-32,5 (30,5-33,5)	100 315 2500	min. 55,0 5,0-6,0 (4,5-9,0) 22,0-26,0 (21,0-27,0)	6,0 (2a) 1,0 (1,5) (5) 2,5 (3,0) (6)

Checking values in brackets

\*Ca.2.8 less control rod travel than in Column 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. C 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 380 l/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=315 \text{ min}^{-1}$  and pu=450 mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders, 19.5 + 0.2 (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 340 l/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (33,0-41,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance — replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 l/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

320

**Festoil-ISO** 

**Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 2.0 p 5

1. Edition

PES 4 M 55 C 320 RS 154 RSF 375/2300 M 61 0 400 074 948 1-3-4-2 0-90-180-270

supersedescompany Daimler-Benz OM 601 //

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1,95-2,15)

mm (from BDC)

Control rod travel 20-22

Note: Before starting testing, observe the important instruc-

tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	шш	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
375	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated si	peed		Upper rated sp	eed		Variations in co	ntrol rod trav	re!
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	r/ev/min	ł	rev/min	mm
1	2	3	4	5	6	7	8	9
13-17 (1)	min.11,	5 250	50 (7)	11,1+0,	1000	(12)	100	min. 20,1
2	5,4-5,6	375	8	7,8-8,2	2500	13	1800	10,8-11,0
3	4,4-4,6	400**	9	-		14)	2200	10,3-10,5
4	-	•	⑩	0-1,0	2950		Suitabias	
(5)	1,5	630-730	<u>(ii)</u>	}	İ	(6)	Switching p	UIIIL
5	1	630-730		1	2320	6	Switching p	oint

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	gelivery (19)		Variations delivery		Idle	luel delivery	Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 3	rev/min	(18) cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 stroke	<b>2</b> S
2200	33,0-35,0 (32,0-36,0)	2500*	1800	34,0-35,5 (33,0-36,5) 31,0-32,0 (30,0-33,0)	100 375 2500	min. 55,0 5,0-6,0 (4,5-9,0) 22,0-26,0 (21,0-27,0)	1,0 (1,5) 2,5 (3,0)	(15)

Checking values in brackets

\*ca. 2.4 less control rod travel than in Column 2

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 375 1/min control-rod travel (4.3-4.7 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=375 \, \text{min}^{-1}$  and  $pu=450 \, \text{mbar}$  control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

8. Setting the idle control-rod travel at PLA box

Loosen correction nut when doing this.

9. Checking the pneumatic idle increase (PLA)

At 0.4 bar vacuum n = 425 1/min, control-rod travel = (7.0-8.7 mm) delivery = (13.0-21.0 ccm/1000 strokes).

10. Leak test (vacuum test) on PLA box

Apply 0.8 bar vacuum to PLA box. Permissible pressure drop 30 mbar in 15 sec.

11. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 l/min, control-rod travel = 6.3-7.0 mm

12. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.

RWG setting
At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U = 2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

**Festoil-ISO** 

## **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 p 4

En

1. Edition

supersedes

company Daimler-Benz

OM 601

53 kW

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

PES 4 M 55 C 320 RS 154

RSF 360/2300 M 63

0 400 074 942

1-3-4-2 0-90-180-270

> 2,00-2,10 (1.95-2,15)

mm (from BDC)

20-22

Note: Before starting Control rod travel testing, observe the important instruc-

tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,1+0,1	3,1-3,2	0,25 (0,3)			
335	5,4-5,6	0,5-0,6	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated speed			Upper rate	Upper rated speed				Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control		Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever		mm	rev/min		rev/min	mmi	
1	2	3	4		5	6	7	8	9	
13-17 ①	min.9,0	225	50	7	11,1+0,1	1000	(2)	100	min. 20,1	
(2)	5,4-5,6	335		(8)	7,8-8,2	2500	1 (3)	1800	10,8-11,0	
3	4,2-4,4	400**		9	-		14	2200	10,3-10,5	
(4)	-			<b>⊚</b>	0-1,0	2950		Switching p	 oint	
(5)	1,5	590-690		(0)			(6)			

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed 8a	Variations delivery		Starting f	uel delivery	
Test oil te	mp. 40°C (104°F)			(8)			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (32,0-36,0)	2500*	1800 1000	34,0-35,5 (33,0-36,5) 31,0-32,0	335	(4,5-9,0)	6,0 (2a) 1,0 (1,5) (15)
				(30,0-33,0)	2500	22,0-26,0 (21,0-27,0)	(3,0) (6)

Checking values in brackets

\*Ca . 2,4 less control rod travel than in Column 2



223

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 400 l/min control-rod travel (4.1-4.5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 0.9-1.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335 \, \text{min}^{-1}$  and  $pu=450 \, \text{mbar control}$  rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 360 l/min, I = 1.8 A, control-rod travel = (12.0-13.4) mm, fuel delivery (30.0-38.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance — replace the servo magnet.

- Control lever up against full-load stop At n=2950 l/min, I=3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the intermediate control curve (control-lever position)

Control lever 30°. n = 1000 1/min, control-rod travel = 6.3-7.0 mm

12. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection

Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Operate at speed of 1000 1/min; a voltage of 2.65-2.73 (2.61-2.77) V must be indicated on digital voltmeter.

RWG setting
At 1000 1/min set a delivery of 18.0-19.0 (17.0-20.0) ccm/1000 strokes with control lever. Move RWG until U=2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 2.65-2.73 V must be obtained.

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 3.0 w 5

1. Edition

En

PES 6 M 55 C 320 RS 156 RSF 315/2300 M 60-4 0 400 076 988

1-5-3-6-2-4 0-60 -120-180-240-300 supersedes

company Daimler-Benz

engine: 0M 603 80 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,00-2,10 (1.95-2.15) mm (from BDC)

20-22

Note: Before starting testing, observe the

Control rod travel tions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,1	3,15-3,25	0,25 (0,3)			
290	5,4-5,6	0,55-0,65	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			
						-1

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

Lower rated speed			Upper rated	speed	•	Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control roo	Rotational speed		Rotational speed	Control rod trave
iever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9 .
13-17 ①	min.7,0	220	50	211,3-11	4 1000	.(12)	100	min. 20,1
2	5,4-5,6	290	(	<u>\$</u> 7,8-8,2	7	13	1800	10,9-11,1
(3)	4,2-4,4	360**	)	<u> </u>		(14)	2200	10,6-10,8
(4)			(1	<b>  0-1,</b> 0	2950		Switching p	ount
(5)	1,5	620-720	(1	(i)		(6)		O.III

### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed 8a	Variations delivery	in fuel (17)	Starting f	uel delivery		-
Test oil te	mp. 40°C (104°F)			🖲		1	Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 stro	kes
1	2	3	4	5	6	7	8	
2200	33,5-35,5 (32,5-36,5)	2500*	1800	34,0-35,5 (33,0-36,5)	100 290	min. 55,0 5,5-6,5	6,0	(12a)
			1000	31,5-32,5 (30,5-33,5)	2500	(5,0-9,5) 22,0-26,0	(1,5) 2,5	(15)
						(21,0-27,0)	(3,0)	16

Checking values in brackets

\*ca.2,8 mm less control rod travel than in Column 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. © 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

4.86

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4,1-4,5 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 0,9-1,0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46,5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=290~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- 6. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders.  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 315 1/min, I = 1.8 A, control-rod travel = (12,6-14,0) mm, fuel delivery (32,0-40,0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop
At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

#### 9. Checking the governor with ADA pressure unit

Speed	Pressure (absolute)	Control-rod travel deduction from
Speed in-1	mbar	max. full-load control-rod travel (mm)
7000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

, t

10. Pin projection =  $16.65 \pm 0.05$  mm

estoil-150

WPP 001/4 MB 3,0 w 2

1. Edition

supersedes

companyDaimler-Benz engine OM 603

110 kW (USA)

PES 6 M 55 C 320 RS 157 RSF 315/2300 M 64 0 400 076 992 1-5-3-6-2-4 0~60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,20-2,30 (2,15-2,35) Port closing at prestroke

mm (from BDC)

20-22

Note: Before starting Control rod travel testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1-5,2	0,25 (0,3)			
290	5,3-5,5	0,55-0,65	0,1 (0,15)			
1600			0,25 (0,3)			
2200		,	0,25 (0,3)	,		
1000	<u></u>	<u> </u>	0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	peed		Upper rated speed				Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control		travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever		mm 💆	rev/min		rev/min	mm
1	2	3	4		5	6	7	8	9
8-12	min.7,0	1	50	_	13,9+0,	1	(2) (3)	100	min. 20,1
(2)	5,3-5,5	290	,	⑻	8,1-8,	2500		1 1000	13,2-13,4
3	4,2-4,4	360**	(	$^{\odot}$	-		(14)	2200	12,3-12,5
(4)	'l	510-610		(1) (1)	0-1,0	2950	6	Switching p	oint

### C. Settings for Fuel Injection Pump with Governor Mounted

delivery (19)	Full-load speed 8a regulation	Variations delivery	in fuel 17	Starting (	uel delivery	
mp. 40°C (104°F)		İ	(18)	1	1	Difference
cm <sup>3</sup> /1000 strokes	rev/min	rëv/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
2	3	4	5	6	7	8
48,5-50,5	2500*	600	50,0-51,5	100	min. 55,0	6,0 (2a)
(47,5-51,5)		000	51,0-52,0	290	5,5-6,5 (5,0-9,5)	1,0 (1,5) (5)
		(	(50,0-53,0)	2500	29,0-33,0	2,5
				į	(28,0-34,0)	(3,0)
	mp. 40°C (104°F) cm³/1000 strokes 2	mp. 40°C (104°F)  cm³/1000 strokes rev/min  2  48,5-50,5  2500*	mp. 40°C (104°F)  cm³/1000 strokes 2  48,5-50,5 (47,5-51,5)  rev/min 2  1600	regulation   Ra   delivery   17   18     cm <sup>3</sup> /1000 strokes   2   2   3   4   5   5     47,5-51,5   (47,5-51,5)   1000   51,0-52,0   (50,0-53,0)	mp. 40°C (104°F)    cm³/1000 strokes   rev/min   cm³/1000 strokes   rev/min   6    48,5-50,5   2500*   1600   50,0-51,5   100   (49,0-52,5)   290   1000   51,0-52,0	mp. 40°C (104°F)  cm³/1000 strokes 2  rev/min 3  rev/min 4  fev/min 5  fev/min 5  fev/min 5  fev/min 6  fev/min 6  fev/min 7  18  cm³/1000 strokes 7  1600  50,0-51,5 (49,0-52,5) (49,0-52,5) 51,0-52,0 (50,0-53,0)

Checking values in brackets

\*ca. 4.0: less control rod travel than in Column 2

#### 1. Testing with ALDA

Point	min <sup>-1</sup>	cm <sub>3</sub> /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	<b>`5.3-5.5</b>	-

- 2. \*\* Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).
- 3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=290~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 6. Overflow valve 1 469 990 351.
- 7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders. 19.5 + 0.2 (0.3) degrees camshaft according to cyl. 1.

En

#### 9. Checking the ELR servo\_magnet

- Control lever up against idle stop At n=315 1/min, I=1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 l/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3
Receiving inspection
Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting At 1000 1/min set a delivery of 23.0-24.0 (22.0-25.0) ccm/1000 strokes with control lever. Move RWG until U=2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

**Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 3,0 w 3

1. Edition

PES 6 M 55 C 320 RS 157 RSF 315/2300 M 64-2 0 400 076 987

1-5-3-6-2-4 0-60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company Daimler-Benz

engine OM 603

110 kW

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

mm (from BDC)

20-22

Note: Before starting Control rod travel testing, observe the

important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000 290 1600 2200 1000	13,9+0,1 5,3-5,5		0,25(0,3) 0,1 (0,15) 0,25(0,3) 0,25(0,3) 0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated spe	eed	•	Variations in control rod travel		
Degree of deflection of control	Control rod travel	Retational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min	Į.	rev/min	mm
1	2	3	4	5	6	7	8	9
_	nin.7,0 5,3-5,5 1,2-4,4 - 2,5	200 290 360** 510-610		3,9+0,1 8,1-8,5 - 0-1,0	2500	(12) (13) (14) (6)	1600	in. 20,1 13,2-13,4 12,3-12,5

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed 8a regulation	Variations delivery	in fuel (17)	Starting f	uel delivery	
Test oil te	mp. 40°C (104°F)			1 (18)			Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	48,5-50,5 (47,5-51,5)	2500*	600	50,0-51,5 49,0-52,5)	100	min.55,0	6,0
			000	51,0-52,0 (50,0-53,0)	290 (	5,5- 6,5 5,0- 9,5)	1,0 1,5) (5
						9,0-33,0) 8,0-34,0)	2,5 (3,0)

Checking values in brackets

\*Ca. 4.0 less control rod travel than in Column 2

#### 1. Testing with ALDA

Point	min <sup>-1</sup>	cm <sub>3</sub> /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

- 2. \*\* Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).
- 3. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=290~\text{min}^{-1}$  and pu=450~mbar control rod must move briskly to control-rod travel = 0 mm.

- 6. Overflow valve 1 469 990 351.
- 7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

En

#### 9. Checking the ELR servo magnet

- Control lever up against idle stop At n = 315 l/min, I = 1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance — replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever  $30^{\circ}$ , n = 1000 1/min, control-rod travel = 9.5-10.2 mm

11. RWG testing and setting with evaluation circuit R2-1.3

Receiving inspection
Bring control lever up against full-load stop. On voltage stabilizer, set 13.5 V. Apply 1850 bar to ALDA. Operate at speed of 1000 1/min; a voltage of 3.23-3.31 (3.19-3.35) V must be indicated on digital voltmeter.

RWG setting At 1000 1/min set a delivery of 23.0-24.0 (22.G-25.0) ccm/1000 strokes with control lever. Move RWG until U=2.095-2.105 is indicated. Tighten fastening screws to 1-2 Nm. Control lever to full-load stop - voltage 3.23-3.31 V must be obtained.

WPP 001/4 MB 3,0 w 4 1. Edition PES 6 M 55 C 320 RS 157-1

supersedes

company

Daimler-Benz

engine

OM 603 110 kW

1-5-3-6-2-4

RSF 315/2300 M 65

0 400 076 986

0-60-120-180-240-300
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

mm (from BDC)

20-22

Note: Before starting Control rod travel testing, observe the important instructions on the reverse.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,9+0,1	5,1 -5,2	0,25 (0,3)			
290	5,3-5,5		0,1 (0,15			
1600			0,25 (0,3)			
2200 1000			0,25 (0,3)			

Set uniform delivery according to the values in [

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rated sp	eed	•	Variations in co	ntrol rod trav	rel
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	2	3	4	5	6	7	8	9
8-12 (1) (2) (3) (4) (5)	min.7,0 5,3-5,5 4,2-4,4 - 2,5	290	50 7 8 9 00 01	0-1,	5 2500	(12) (13) (14) (6)	,	min.20,1 13,2-13,4 12,3-12,5

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	lelivery (19)	Full-load speed 8a regulation	Variations delivery		Starting fuel delivery Idle			
Test oil ter	mp. 40°C (104°F)		1	1 (8)	(18)		Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	6	7	8	
2200	48,5-50,5 (47,5-51,5)	2500*	1600	50,0-51,5 (49,0-52,5)	100	min. 55,0	6,0 (2a)	
	(, 6 0., 6,		1000	51,0-52,0 (50,0-53,0)	290	5,5 - 6,5 (5,0 - 9,5)	1,0 (1,5) (15)	
				(33,5 33,5)		29,0 -33,0 28,0- 34,0)	2,5 (3,0) <sup>16</sup>	

Checking values in brackets

\*ca. 4.0 less control rod travel than in Column 2

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Eg

#### 1. Testing with ALDA

Point	min <sup>-1</sup>	cm <sub>3</sub> /1000 strokes	Control-rod travel	Pressure absolute
18	1000	51.0-52.0 (50.0-53.0)	13.9-14.0	1850 mbar
18a	1000	33.0-34.0 (32.0-35.0)	9.9-10.1	1050 mbar
19	2200	48.5-50.5 (47.5-51.5)	12.3-12.5	1850 mbar
12a	100	min. 52.0	min. 20.1	-
15	290	5.5-6.5 (5.0-9.5)	5.3-5.5	-

- 2. \*\* Checking of idle-auxiliary spring; setting at n = 360 l/min control-rod travel (4.1-4.5 mm).
- 3. Setting the idle control-lever position:

At 1000 1/min, control-rod travel 1.7-1.8 mm.

4. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 46.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

5. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n = 290 \text{ min}^{-1}$  and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm.

- 6. Overflow valve 1 469 990 351.
- 7. Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 8. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $19.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

En

#### 9. Checking the ELR servo magnet

- Control lever up against idle stop At n=315 l/min, I=1.8 A, control-rod travel = (12.8-14.2) mm, fuel delivery (42.0-49.0) ccm/1000 strokes.

Note:

If the measured delivery is more than 2.0 ccm/1000 strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n=2950 1/min, I=3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting: At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

10. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 l/min, control-rod travel = 9.5-10.2 mm

En

**Testoil-ISO 4113** 

PES 5 M/55 C 320 RS 159 RSF 340/2300 M 60-3 0 400 075 976

supersedes-

company Daimler-Benz OM 602-LVP

66 kW

1-2-4-5-3

0-72-144-216-288
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,50-1,60 (1,45-1,65) mm (from BDC)

20-22

Note: Before starting Control rod travel testing, observe the important instructions on the reverse.

Rotational speed	Control rod travei.	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	11,3+0,	3,1-3,2	0,25(0,3)			
315	5,0-5,2	0,5-0,6	0,1 (0,15	}		
1800		•	0,25(0,3)			
2250			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

Lower rated sp	eed		Upper rated	l speed		Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min	İ	rev/min	mm
1	2	3	4	5	6	7	8	9
(2) (3) (4)	min.7,5 5,0-5,2 3,8-4,0	315		7 11,3+0,1 8 7,0-7,4 9 - 10 0-1,0	2500	12) (14)	100 1800 2250 Switching p	min. 20,1 10.8-11,0 10,4-10,6
(5)	2,5	530-630		שו		6		

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed (6a)				Starting fuel delivery ldle			
Test oil te	mp. 40°C (104°F)			1 18			Difference		
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 stro	kes	
1	2	3	4	5	6	7	8		
2250	32,0-34,0 (31.0-35,0)	2500*	1800	34,0-35,5 (33,0-36,5)	100	min.55,0	6,0	(23)	
			1000	31,0-32,0 (30,0-33,0)	315	5,0- 6,0 (4,5- 9,0)	1,0 (1,5)	(15)	
						16,0-20,0 15.0-21.0)	2,5	16	

Checking values in brackets

\*Ca.3,5 less control rod travel than in Column 2

• (

- 1. \*\* Checking of idle-auxiliary spring; setting at n = 380 1/min control-rod travel (3.7-4.1 mm).
- 2. Setting the idle control-lever position:

At 1000 1/min. control-rod travel 1.9-2.0 mm.

3. Checking the idle-auxiliary spring cutoff

Control-lever position 49°, after switchover point (from starting cam) up to 1000 1/min max. 0.2 mm control-rod travel deduction permissible. Control-lever position 48.5°, after switchover point (from starting cam) control-rod travel deduction must be greater than 0.2 mm.

4. Checking the pneumatic shutoff box

Control lever up against idle stop. At  $n=335 \, \text{min}^{-1}$  and  $pu=450 \, \text{mbar control}$  rod must move briskly to control-rod travel = 0 mm.

- 5. Overflow valve 1 469 990 351.
- Start-of-delivery spacing (difference) between largest/smallest value 1° camshaft max.
- 7. FBG setting

FBG setting and locking according to start of delivery average of all cylinders,  $18.5 \pm 0.2$  (0.3) degrees camshaft according to cyl. 1.

- 8. Checking the ELR servo magnet
  - Control lever up against idle stop At n = 340 l/min, I = 1.8 A, control-rod travel = (12.5-13.9) mm, fuel delivery (33.0-41.0) ccm/1000 strokes.

Note:

If the measured delivery is more than  $2.0\ \text{ccm/1000}$  strokes outside the checking tolerance - replace the servo magnet.

- Control lever up against full-load stop At n = 2950 l/min, I = 3 A (briefly), control-rod travel = 0-1.0 mm

Checking of starting:

At n = 100 1/min, I = 1.8 A, delivery min. 55.0 ccm/1000 strokes.

9. Checking the intermediate control curve (control-lever position)

Control lever 30°, n = 1000 1/min, control-rod travel 7.1-7.8mm

10. Checking the governor with ADA pressure unit

Speed	Pressure (absolute)	Control-rod travel deduction from
Speed in-1	mbar	max. full-load control-rod travel (mm)
1000	930	0.1-0.5
1000	840	1.1-1.3
1000	700	2.3-2.7

11. Pin projection =  $16.65 \pm 0.05$  mm

En

WPP 001/4 MB 3.0x

En

1. Edition

PES 5 MW 55/320 RS 15 RW 375/1450 MW 19-1

0 403 245 024 1-2 - 4 - 5 - 3

 $0-72-144-216-288 \pm 0.50 (0.75)$ 

supersedes-

company Daimler-Benz

W 123/0MG 17

51,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

°1,70-1,80 mm (from BDC) (1,65-1,85)

Control rod travel

without ADA

19,5-22,5 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,1+0,1	3,8-3,9	0,25(0,3)			
350	6,3-6,	0,65-0,75	0,1 (0,15)			
1430			0,25(0,3)		-	
2080			0,25(0,3)			
				,		

Set uniform delivery according to the values in

Checking values in brackets

#### **B. Governor Settings**

without ADA

Lower rated sp	eed		Upper rated speed			Variations in control rod travet		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed	λ.	Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31 ① 2 3 4 5	min.11 max.11 6,3-6,5 ** - 2,0	100 250 350 360 - 600-650		7 12,1 8 9 0,0-1,	1570-1590 2400	12 13 14 6	13,1–1 Switching po	3,2 1430 3,2 1000

#### C. Settings for Fuel Injection Pump with Governor Mounted

without ADA

Full-load d	delivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting t	uel delivery	
Test oil ter	mp. 40°C (104°F)			1 (18)	1	1	Difference
rev/miກ	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
1430	39,5-42,5 (38,5-43,5)	1570-1590 * (1560-1600)	1000	38,0-39,0 (37,0-40,0)	100 350 2080	min. 57 6,5-7,5 (6,0-10,0) 9,0-15,0 (8,0-16,0)	6,0 (2a) 1,0 (1,5) 2,5 (3,0)

Checking values in brackets

\* 1 mm

less control rod travel than in Column 2

8.84

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

7. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

1. Test sequence - Change in VDT-W-420/300 Suppl. 2, Ed. 2

#### Section 4.1 - Adjust the spring retainer (compensation capsule)

#### New text:

Run the injection pump at n = 1,000 min<sup>-1</sup>. Fix the control lever at 69°. Using a pin wrench, turn in the spring retainer so far that the control-rod travel is reached at n = 1,000 min<sup>-1</sup>. Pin wrench = KDEP 1064/1. Measure the full-load delivery.

#### Section 4.3 changes as follows:

Drive the injection pump at  $n=800~\text{min}^{-1}$ . Set the control lever so that the control-rod travel reaches 1,0 - 1,3 mm. The control lever must lie within the permissible tolerance. Move the idle stop up against the control lever and lock it there. Reduce the pump speed to  $n=350~\text{min}^{-1}$  and release the leaf spring (32) with the lower adjusting screw (28) until the control-rod travel specified in the Test-Specifications Sheet is reached. Carry on according to the Testing Instructions, taking into account that Section 4.8 no longer applies.

2. Testing of Sections A, B and C is carried out without altitude pressure compensator (ADA) aneroid box.

After this test has been completed, the aneroid box is refitted.

#### Testing the governor with the ADA aneroid box.

Pump speed	Pressure (abs. in mbar)	Reduction from the maximum full-load control-rod travel (mm)
1,000	840	0,9 - 1,1 (0,85 - 1,15)
1,000	913	0,1 - 0,5 (0,05 - 0,55)
1,000	666	2,2 - 3,0 (2,15 - 3,05)

- 3. Pin projection dimension =  $16.65 \pm 0.05$  mm
- 4. \*\* At this pump speed, apply pressure to the control lever and increase the control-rod travel by 0.4 +0.1 mm.

  The idle delivery may not change.

- 5. Setting angle Idle/full-load 38 420
- 6. Sensing-lever setting: Bring sensing lever into contact at n = 375 min<sup>-1</sup> (control lever in full-load position). Control-rod travel must be 0.1 (0.1 0.2) mm more than the full-load control-rod travel at n = 1,000 min<sup>-1</sup>.
- 7. Pneumatic shut-off check:

Move the control lever to the idle position. Drive the injection pump at  $n=350\,\text{min}^{-1}$ . At Pµ = 450 mbar (338 mm Hg) (vacuum), the control rod must move rapidly to control-rod travel = 0 mm position.

Testoil-ISO 4113

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MB 3.0 q

8. Edition

supersedes 1.85

company Daimler-Benz OM 617A - USA 84.6 kW

(Set idle stage) before starting test. Please note instructions on reverse side.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

PES 5 MW 55/320 RS 16

RW 375/2200 MW 22

0 403 245 008

2,10-2,20 (2,05-2,25)

mm (from BDC)

21 mm

Control rod travel

without ALDA

En

	_		WICHOUL ALDA					
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)		
rev/min	mm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm <sup>3</sup> /100 strokes	mm		
1	2	3	4	2	3	6		
1000	13,6+0,	5,35-5,45	0,25(0,3)					
365 1600 2180	5,3-5,4	0,9-1,0	0,05 (0,15 0,25(0,3) 0,25(0,3)	)				

Set uniform delivery according to the values in [

Checking values in brackets

#### **B. Governor Settings**

Lower rated sp	eed		Upper rated spe	eed		Variations in control rod travel		
Degree of deflection of control	Control rod travel			Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
30 ① ② ③ ④	min.11 max.11 5,3-5,4 **	100 320 365	67 ± 27 (8) (9)	4,0 0-1.0	2300-2320 2620-2720 2950	(12) (13) (14)	100 1600 1000 2180 Switching po	20,5-21,5 12,7-12,9 13,6-13,7 11,7-11,9
5	-		0			6	260-310	

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	elivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting f	uel delivery	
	np. 40°C (104°F) 			18			Difference
rev/min 1	2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	cm <sup>3</sup> /1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600 · 1000	(51,0-54,5)	100 365 375 2550	min.55,0 9,0-10,0 (7,5-11,5) (5,5-7,5)** 24,5-27,5 (23,5-28,5)	6,0 (22) 1,0 (1,5) (1,5) (2,5) (3,0) (16)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2



#### Test with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar ( 800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar ( 740 mmHG)

#### 1. Setting the idle stage: without ALDA

Text replaces Section 4.1 of test instructions Set control-lever position  $30^{\circ}$ . Drive injection pump at  $n=800 \text{ min}^{-1}$ . Screw in spring retainer (torque-control retainer) so that control-rod travel of 1,0 - 1,3 mm is obtained. Further test steps as per test instructions VDT-W-420/300.

2. \*\* Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

#### 3. <u>Setting the sensing finger:</u>

Bring sensing finger into engagement at  $n=350 \text{ min}^{-1}$  with control lever in full-load position. Control-rod travel must be 0.2-0.5 mm (0.1-0.6) mm above full-load control-rod travel at  $n=1000 \text{ min}^{-1}$  and 1733 mbar (1300 mmHG)/setting without ALDA.

- 4. \*\*\* Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction + 0.75 mm control-rod travel.
- 5. Shutoff check: Spring idle stop compressed. at  $n = 200 \text{ min}^{-1} \text{ max. control-rod travel} = 5 \text{ mm.}$
- 6. Pin projection dimension =  $16.65 \pm 0.1$  mm
- 7. Checking the pneumatic shutoff: Control lever in idle position. Drive injection pump at  $n=375~\text{min}^{-1}$ . At  $p_u=450~\text{mbar}$  (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.
- 8. Adjustment range between idle and full load = 35 39°
- 9. \*\* Idle checking point.

Testoil-ISO

## **Test Specifications Fuel Injection Pumps** and Governors

WPP 00 1/4 MB 3,0 m

4. Edition

PES 5 MW 55/320 RS 16 RW 375/2200 MW 28-1 0 403 245 013 0 403 245 014 - Sales model

supersedes 8.84 company Daimler Benz

OM 617 A

Use overflow valve 1 417413 012

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Note: Before starting testing, observe the important instruc-Control rod travel tions on the reverse.

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20

mm (from BDC)

without ALDA

(2.05-2.25)

19,5-22,5

		, , ,				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,	5,15 - 5,25	0,25(0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			
	L	1		•	1	1

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

without ALDA

Lower rated sp	eed		Upper rated spo	eed		Variations in control rod travel		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm
1	2	3	4	5	6	7	8	9
27-31	min.11 max.11	100 320	69 (8)	12,1-12	3 2180	(12) (13)	100	20,5-21,5
<u> </u>	5 <b>,7-</b> 5 <b>,</b> 8	365	9	11,2	2300-2320	(14)	1600	13,1-13,3
<b>(</b>	-	-	<u></u>	4,0	2620-2720		1000 Switching po	13,5-13,6
(5)	-	•	11	0,0-1,0	2950 -	6	· ·	)(240 <b>-</b> 330)

### C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load o	delivery (19)	Full-load speed 8a regulation	Variations delivery	in fuel 17	Starting t	uel delivery	
Test oil temp. 40°C (104°F)				] (8		1	Difference
rev/mjn	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54, <del>0</del> )	100	min. 55,0 (52,0)	6,0 (23
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)	1,0
	· i				375	(5,5-9,5)++	(1,5)
					2550	24,0-30,0 (23,0-31,0)	2,5 (6) (3,0)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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#### Testing with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar( 800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 ( 8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

#### 1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of  $69^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>.

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of  $49^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8,8 - 9,5 must be reached.

#### 2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at  $n = 800 \text{ min}^{-1}$ . Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

- 3. Adjusting the idle-speed auxiliary spring (70)
- Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at n=520-550 min<sup>-1</sup>.
- 4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at  $n=375\,\mathrm{min}^{-1}$ . Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at  $n=1000^{-1}$ .

- 5. \*\*\* Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction ± 0.75 mm control-rod travel.
- 6. Pin projection =  $16.65 \pm 0.1 \text{ mm}$
- 7. Shutoff check: Operate the fuel-injection pump at  $n = 200 \text{ min}^{-1}$ . Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.
- 8. Test the pneumatic shutoff: Control lever in idle position. Operate the fuel-injection pump at  $n=375\,\mathrm{min}^{-1}$ . At 450 mbar (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.
- 9. Control-lever range idle full load =  $38 42^{\circ}$ .
- 10. \*\* Idle checking point

WPP 001/4 MB 3,0 t

3. Edition

En

RW 375/2200 MW 28-3 PES 5 MW 55/320 RS 16 0 403 245 020 0 403 245 021 - Sales model

supersedes 6.84

Daimler-Benz company OM 617 A-USA engine

92 kW (125 PS)

Start-of-delivery adjustment and blocking 19.5° after start-of-delivery cylinder 1. All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

without ALDA

2,10-2,20 (2,05-2,25)

mm (from BDC)

Note: Before starting Control rod travel testing, observe the important instruc-

19,5-22,5

tions on the reverse.

ravel			travel		(compensating valve)
πm	cm <sup>3</sup> /100 strokes	cm³/100 strokes	mm	cm³/100 strokes	mm
<u>}</u>	3	4	2	3	6
13,5+0,1	5,15-5,25	0,25(0,3)			
5,7-5,8	1,0-1,1	0,05(0,15)			
		0,25(0,3)			
		0,25(0,3)			
1	13,5+0,1	1,,,,,	cm <sup>3</sup> /100 strokes 3 cm <sup>3</sup> /100 strokes 4 0,25(0,3) 5,7-5,8 1,0-1,1 0,05(0,15) 0,25(0,3)	cm <sup>3</sup> /100 strokes cm <sup>3</sup> /100 strokes mm 2  13,5+0,1 5,15-5,25 0,25(0,3)  5,7-5,8 1,0-1,1 0,05(0,15) 0,25(0,3)	cm <sup>3</sup> /100 strokes cm <sup>3</sup> /100 strokes mm cm <sup>3</sup> /100 strokes 3  13,5+0,1 5,15-5,25  0,25(0,3)  5,7-5,8 1,0-1,1  0,05(0,15)  0,25(0,3)

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

without ALDA

Lower rated sp	eed		Upper rated sp	eed		Variations in control rod travel			
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/min	lever	mm	rev/min		rev/min	mm	
1	2	3	4	5	6	7	8	9	
27-31 ①	min.11 max.11	100 320	69 ①	12,1-12		(12)	100	20,5-21,5	
(2) (3)	5,7-5,8 **	365		4,0	2300-2320 2620-2720		1600 1000	13,1-13,3 13,5-13,6	
<b>4 5</b>	-	- -		0,0-1,0	2950 -	<u> </u>	Switching p 260-310	(240-330)	

#### C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load d	elivery (19)	Full-load speed (8a) regulation	Variations delivery	in fuel (17)	Starting for	uel delivery	Difference
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	cm³/1000 strokes 8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600 1000	(50,5-54,0) 51,5-52,5 (50,5-53,5)	365 3 <b>7</b> 5	min. 55,0 (52,0) 10,0-11,0 (8,5-12,5) (5,5-9,5)** 24,0-30,0 (23,0-31,0)	6,0 0,5 (1,5) (1,5) 2,5 (3,0)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

12.85

#### Testing with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 strokes	Control-rod tr	ravel Pressure (absolute)
18	1000	51,5-52,5	13,5 - 13,6	1733 mbar (1300 mmHg)
		(50,5-53,5)		
<del></del>	***			
18a	1000	41,0-43,0	-	1067 mbar ( 800 mmHg)
		(40,0-44,0		
19	2180	50,0-52,0	12,1 - 12,3	1733 mbar (1300 mmHg)
		(49,0-53,0)		
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986 mbar ( 740 mmHg)

#### 1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle  $69^{\circ}$ . Drive injection pump at  $1000 \text{ min}^{-1}$ . Screw the spring retainer in until control-rod travel 13.5 - 13.6 mm is reached.

Set control lever at advance angle 49°. Drive injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8.8 - 9,5 mm must be reached.

#### 2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at  $n = 800 \text{ min}^{-1}$ . Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

#### 3. Setting the idle auxiliary spring (70)

\*\* Set the idle auxiliary spring so that it just touches at  $n = 520 - 550 \text{ min}^{-1}$  at the end of the characteristic curve.

#### 4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at  $n=375~\text{min}^{-1}$ . Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at  $n=1000~\text{min}^{-1}$ .

- 5. \*\*\* Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction  $\pm$  0.75 mm controlrod travel.
- 6. Pin projection =  $16.65 \pm 0.1$  mm.
- 7. Stop check: Drive the injection pump at n = 200 min<sup>-1</sup>. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
- 8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min<sup>-1</sup>. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
- 9. Range of adjustment idle full load = 38 42°.
- 10. \*\* Idle checking point.
- 11. Use overflow valve 1 417 413 012

40

WPP 001/4 MB 3,0 t 1 3. Edition

<u>En</u>

PES 5 MW 55/320 RS 16

RW 375/2200 MN 29-1

supersedes 84

company Daimler-Benz engine OM 617A-USA

ngine: UM ひ1/A-USA ロ2 い1 (125 DC

0 403 245 022

0 403 245 023 - Sales model

92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

Note: Before starting Control rod traveltesting, observe the

19,5-22,5

important instructions on the reverse.

without ALD.

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0	,1 5,15-5,25	0,25(0,3)			
3 <b>6</b> 5 1600 2180	5,7-5,8	1,0-1,1	0,05(0,15) 0,25(0,3) 0,25(0,3)			
Start-of-de	livery a	justment and b	ocking 19.	5° after	start-of-deli	very cylinder 1

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

without ALDA

Lower rated sp	eed		Upper rated sp	eed		Variations in control rod travel			
Degree of deflection of control	travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel	
lever	mm	rev/mm	lever	5	6	,	8	10	
	ļ <u></u>		ļ	<del> </del>		<u> </u>	<del> </del>	<del></del>	
27-31 ①	min.11	100	69 🕜	12,1-12	3 2180	1 12	100	min. 55	
(2)	max.11	320	8	11,2	2300-2320	(3)	600	13,1-13,3	
(3)	5,7-5,8	365	9	4,0	2620-2720	14)	000	13,5-13,6	
(A)	**		(10	0,0-1,	2950			1	
(5)	=	=			-		Switching p	oint	
				<u>'</u>		1 20	0-310(2	40-330)	

#### C. Settings for Fuel Injection Pump with Governor Mounted

without ALDA

Full-load d		Full-load speed 8a regulation	Variations delivery		Starting for	uel delivery		
Test oil ter	mp. 40°C (104°F)		1	(18)	i l		Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 stroke	<b>?</b> S
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600 1000	51,5-53,0 (50,5-54,0) 51,5-52,5 (50,5-53,5)	100 365 375 2550	min. 55,0 10,0-11,0 (8,5-12,5) (5,5-9,5) ** 24,0-30,0 (23,0-31,0)	0,5	(2a) (15) (16)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

12.85

**BOSCH** 

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. c 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

3

#### Testing with ALDA

Point	min-1	cm³/1000 strokes	Control-rod tr	ravel	Pressu	re (a	bsolute
18	1000	51,5-52,5	13,5 - 13,6	1733	mbar (	1300	mmHg)
		(50,5-53,5)					
	***	·		<del> </del>			
18a	1000	41,0-43,0	_	1067	mbar (	800	mmHa)
		(40,0-44,0		,,,,		,	
19	2180	50,0-52,0	12,1 - 12,3	1733	mbar (	1300	mmHg)
		(49,0-53,0)		ç			
12a	100	min. 55	20,5 - 21,5	1733	mbar (	1300	mmHg)
15	365	10,0-11,0 (8,5-12,5)	5,7 - 5,8	986	mbar (	740	mmHg)

#### 1. Setting the idle stage

Text replaces Section 4.1 of Test Instructions VDT-W-420/300 En Supplement 2, 2. Edition.

Set control lever at advance angle  $69^{\circ}$ . Drive injection pump at  $1000~\text{min}^{-1}$ . Screw the spring retainer in until control-rod travel 13.5-13.6~mm is reached.

Set control lever at advance angle  $49^{\circ}$ . Drive injection pump at  $1000~\text{min}^{-1}$ . Control-rod travel 8.8-9.5~mm must be reached.

#### 2. Setting the lower rated speed

Text replaces Section 4.3 of Test Instructions VDT-W-420/300 En Supplement 2, 2 Edition.

Drive injection pump at  $n = 800 \text{ min}^{-1}$ . Move the control lever back until control-rod travel 1.0 - 1.3 mm is reached.

The resulting control lever deflection must lie within the permissible limits. Fix the control lever in this position. Drive the injection pump at speed as per point 2, Section B of the Test Specification Sheet. Set the control-rod travel at adjusting screw (28).

#### 3. Setting the idle auxiliary spring (70)

\*\* Set the idle auxiliary spring so that it just touches at n = 520 - 550 min<sup>-1</sup> at the end of the characteristic curve.

#### 4. Setting the sensing lever

Move the control lever to the full-load stop. Drive the injection pump at n =  $375 \text{ min}^{-1}$ . Set the sensing lever so that the control-rod travel lies 0.1 (0.1 - 0.2) mm over full-load control-rod travel at n =  $1000 \text{ min}^{-1}$ .

- 5. \*\*\* Correction of the injected fuel quantity at the correction screw of the ALDA aneroid box. Max. correction  $\pm$  0.75 mm controlrod travel.
- 6. Pin projection =  $16.65 \pm 0.1$  mm.
- 7. Stop check: Drive the injection pump at n = 200 min<sup>-1</sup>. Overbridge the elastic idle stop. The resulting control-rod travel may be at most 5 mm.
- 8. Check the pneumatic shutoff: Control lever in idle position. Drive the injection pump at n = 375 min<sup>-1</sup>. At Pu = 450 bar (338 mmHg) (vacuum) control rod must return quickly to control-rod travel 0 mm.
- 9. Range of adjustment idle full load = 38 42°.
- 10. \*\* Idle checking point.

40

WPP 001/4 MB 3,0 t 2 3. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16-1 RW 375/2200 MW 28-3 0 403 245 025 0 403 245 026-Sales model

supersedes 6.84

company Daimler-Benz OM 617 A-USA

gine UM 617 A-USA 92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Porticlosing at prestroke

2,10-2,20 (2,05-2,25)

mm (from BDC)

19,5-22,5<sup>Control rod travel</sup>

Note: Before starting testing, observe the important instructions on the reverse.

without ALDA

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> /100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1000	13,5+0,	5,15-5,25	0,25 (0,3)			
365	5,7-5,8	1,0-1,1	0,05 (0,15)			
1600			0,25 (0,3)			
2180			0,25 (0,3)			
start-of-de	livery ad	justment and b	locking 19.5	° after	start-of-delive	ry cylinder 1.

Set uniform delivery according to the values in

Checking values in brackets

#### **B.** Governor Settings

#### without ALDA

Lower rated sp	eed		Upper rated sp	eed		Variations in control rod travet		
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod travel	Rotational speed		Rotational speed	Control rod travel
lever	mm	rev/min	lever	mm	rev/min	}	rev/min	mm
1	2	3	4	5	6	7	8	9
	min.11 max.11	100 320	69 🥡	12,1-12	,3 2180	12	100	20,5-21,5
<u> </u>	5,7-5,8 **	365	9	4.0	2300-2320 2620-2720	(13)	1600 1000	13,1-13,3 13,5-13,6
(4)	-	<u>-</u>	9	0,0-1,0 -	2950 -	6	Switching po	•

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full-load o	delivery (19)	Full-load speed (8a)	Variations delivery	in fuel (17)	Starting for	uel delivery	·	
Test oil te	mp. 40°C (104°F)	_		(18)			Difference	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 stroke:	s
1	2	3	4	5	6	7	8	
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2290-2330)	1600	51,5-53,0 (50,5-54,0)	100	min. 55,0 (52,0)	6,0 (	123
			1000	51,5-52,5 (50,5-53,5)	365	10,0-11,0 (8,5-12,5)		15)
•				1	375 2550	( 5,5-9,5)** 24,0-30,0 (23,0-31,0)		16)

Checking values in brackets

\* 1 mm less control rod travel than in Column 2

BOSCH

40.00

without ALDA

#### Testing with ALDA

Point	min <sup>-1</sup>	cm <sup>3</sup> /1000 H	RW	Pressure (absolute)
18	1000	51,5 - 52,5 (50,5 - 53,5)	13,5 - 13,6	1733 mbar(1300 mmHg)
18a	*** 1000	41,0 - 43,0 (40,0 - 44,0)	-	1067 mbar( 800 mmHg)
19	2180	50,0 - 52,0 (49,0 - 53,0)	12,1 - 12,3	1733 mbar (1300 mmHg)
12a	100	min. 55	20,5 - 21,5	1733 mbar (1300 mmHg)
15	365	10,0 - 11,0 ( 8,5 - 12,5)	5,7 - 5,8	986 mbar (740 mmHg)

#### 1. Adjusting the idle

Test supersedes Section 4.1 of test instructions VDT-W-420/300 Suppl. 2, Ed. 2.

Set the control lever to an angle of  $69^{\circ}$ . Operate the fuel-injection pump at  $1000 \text{ min}^{-1}$ .

Screw in the spring retainer until a control-rod travel of 13,5 - 13,6 mm is reached.

Set the control lever to an angle of  $49^{\circ}$ . Operate the fuel-injection pump at 1000 min<sup>-1</sup>. Control-rod travel 8,8-9,5 mm must be reached.

#### 2. Adjusting the lower rated speed

Text supersedes Section 4.3 of test instructions VDT-W 420/300 Suppl. 2, Ed. 2.

Operate the fuel-injection pump at  $n = 800 \text{ min}^{-1}$ . Take back the control lever until a control-rod travel of 1.0 - 1.3 mm is reached.

The resulting deflection of the control lever must be within the allowable tolerance. Fix the control lever in this position. Drive the fuel-injection pump at a speed according to Point 2 Section B of the test specification sheet. Set regulation at adjusting screw (28).

#### 3. Adjusting the idle-speed auxiliary spring (70)

\*\* Position the idle-speed auxiliary spring in contact as the characteristic curve levels off at  $n=520-550 \, \text{min}^{-1}$ .

#### 4. Adjusting the sensing lever

Place the control lever against the full-load stop. Operate the fuel-injection pump at  $n=375\,\mathrm{min}^{-1}$ . Adjust the sensing lever so that the control-rod travel is 0.1 (0.1 - 0.2) mm above the full-load control-rod travel at  $n=1000^{-1}$ .

- 5. \*\*\* Correct the quantity of fuel injected at the correction screw of the ALDA aneroid box. Max. correction <a href="https://doi.org/10.75"> 0.75</a> mm control-rod travel.
- 6. Pin projection = 16.65 + 0.1 mm
- 7. Shutoff check: Operate the fuel-injection pump at n = 200 min<sup>-1</sup>. Force the control rod through the spring-loaded idle stop. The resulting control-rod travel must be max. 5 mm.
- 8. Test the pneumatic shutoff: Control lever in idle position.

  Operate the fuel-injection pump at n = 375 min<sup>-1</sup>. At 450 mbar

  (338 mmHg) (vacuum) the control rod must move briskly to control-rod travel 0 mm.
- 9. Control-lever range idle full load =  $38 42^{\circ}$ .

## 10. Testing and setting of control-rod travel sensor with evaluation circuit K5/EES - RWG.00 RBN - 40

#### Receiving inspection:

Set control lever so that a voltage of 2.1  $\pm$  0.005 V is indicated on the digital voltmeter.

Set engine speed of 1000 1/min; fuel delivery of 27.5 - 28.5 ccm/1000 lifts must be reached. Control lever at full-load stop (control-rod travel 13.5 - 13.6), voltage value 3.2 + 0.08 V.

#### Setting the control-rod travel sensor:

At 1000 1/min set a fuel delivery of 27.5 - 28.5 ccm/1000 lifts with control lever. Move control-rod travel sensor until  $U = 2.1 \pm 0.005$  V is indicated (tighten fastening screws to 3 Nm). Control lever at full-load stop (control-rod travel = 13.5 - 13.6); voltage of  $3.2 \pm 0.04$  V must be reached.

#### 11. \*\* Idle checking point

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 6,1 f

2. Edition

PES 6 MW 100/320 RS 1119 RQV 300-1400 MW 58 0 403 446 151

supersedes 10.85

company: Volvo

engine: TD 61.3012

113 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres		3,20-3,30 3,15-3,35)	mm (from BDC)			
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1000	10,1+0,1	7,5-7,7	0,35(0,6)	2	3	8
1000	10, 140, 1	7,5-7,7	0,35(0,0)			
300	6,5-6,6	1,6-2,0	0,35(0,55	þ		<u> </u>
<u>.</u>			<u> </u>			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed			intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
Degree of deflection of control lever		Control rod travel mm rev/min 3		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deffection of control lever	rev/min	Control rod travel mm 3	rev/min	0
max.	1480 1680	15,2-17 0-1,	7		•		ca. 13	300 100	6,5-6,6 min.8,1		
ca. 60	9,0 4,0	1440-14 1565-15									
							<b>3</b> 9				

Torqué controi travel a -

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle s	very characteristics (5a)	Idle	fuel delivery 6	Torque- travel	control (5)
sev/min	cm³/1000 strokes .	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4 .	5	6	7	8	9
1000	75,0-77,0 (73,0-79,0)	1440-1450*			100 300	140,0-160,0 (137,0-163,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

F8

WPP 001/4 IHC 9,4a

2. Edition

PES 8 P 100 A 921/5 RS 286 RQV 325-1250 PA 445 KR

supersedes 5.83 company: IHC

1-8-4-2-7-3-6-5 je  $45^{\circ}$   $\pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ ) Values only apply to test nozzle-and-holder assembly

DVT 573 B engine:

1 688 901 017 and fuel-injection test tubing 9 681 271 023

Komb.-Nr.0 402 058 04

Suction-gallery pressure 2,8 bar

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	2,7-2,8 (2.65-2.85)	mm (from BDC	:)		
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	10,9-11,1	0,4			
325	5,0-5,1	1,7-2,3	7			
	-					

Adjust the fuel delivery from each outlet according to the values in F

#### **B.** Governor Settings

Upper rated: Degree of deflection of control lever 1	rev/min Control rod travel mm	Control rod (1a) travel mm (2a) 3	Intermediate Degree of deflection of control lever 4	rated sp rev/min 5	Control rod travel	Lower rated Degree of deflection of control iever 7	speed rev/min 8	Control rod travel	Sliding s rev/min 10	mm
ca. 63	8,6 4,0 1640	1290-1300 1505-1535 0-1,0	-	•	-	ca.10	100 325 350-4	7,1-8,0 4,9-5,1 10=2,0	•	•

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel delic high idle s	very characteristics 56 poeed 5b	Starting Idle switchir		Torque- travel	Control co
rev/min 1	cm³/1000 strokes .	rev/min 4a)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
LDA 1250	0,8 bar 109,0-111,0	1290-1300*	LDA 900	0,8 bar	100	min. 170,0		9,6+0,1
1250	(107,0-113,0)		900	115,0-121,0 (113,0-123,0)	325	17,0-23,0	700	10,1+0, 9,8+0,
	·		LDA 800	0 bar 73,0-81,0 (71,0-83,0)				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

D. Adjustment Test for Manifold Pressure Compensator

IHC 9,4a

-2-

Test at n =

800

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 8 PRS 286 +RQVPA 445 KR	0,11-0,16	0,82-0,87	्र Start end
		0,02 0,07	

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 KHD 30,4 k 1

1. Edition

PE 12 P 130 A 920 RS 294-1 Komb.-Nr. 0 401 870 077

RSUV 300-750 P9A 322 R

supersedes KHD

1-10-5-7-2-11-6-8-3-12-4-9 je  $30^{\circ}$   $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1.95-2.15)

mm (from BDC)

; RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)	2	3	6
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interm	ediate rate	d speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel		1		Control- lever		Control rod travel		Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min . 8	mm 9	rev/min	mm 11
loose	800	0,3-1,0	-	-	<del>-</del>	ca. 25	300	6,2	750 280	13,5-13,6 14,7-15,3
	x = 4	1,0					300	6,1-6,3	450	13,5-13,6
ca. 62	12,5 4,0 970	790-800 810-840 0,3-1,7		,			300-36	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ill-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	fuel delivery 5	<b>4a</b> ) Id	e stop
Test oil to rev/min	emp. 40°C (104°F)     cm³/1000 strokes   2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min	Control root travel mm
	pecifications uest.	790-800*	<b>-</b> '	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 15,2 a

2. Edition

En

PE 6 P 120 A 420 LS 324

RSUV 250-600 P8A 321 R

supersedes 6.83

company engine KHD BA 6 M 816

Komb.-Nr. 0 401 876 228

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

2,0-2,1 (1,95-2,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm*/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	29,5-29,9	0,5 (0,9)			
250	6,0-6,2	2,0-2,6	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Interme	diate rated	speed	<b>(4)</b>	Lower	rated speed	(3) 10	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	/	8	9	10	11
loose	775	0,3-1,0	-	-	-	ca.26	250	5,6	600	14,9-15,0
	x =	4,0					250	6,0-6,2	270 350	16,2-16,8 14,9-15,0
ca.65	13,9	640-650					250-31	0 = 2,0		
	4,0	660-690					1			
(28)	800	0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Note:		nel delivery aracteristics	Starting f	uel delivery 5	(4a) Idi	e stop  Control rod
rev/min 1	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
1	nown. t according to	640-650* the engine r	- ecord	- •	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

WPP 001/4 KHD 15,2 a 1

1. Edition

PE 6 P 130 A 420 LS 324-1 RSUV 250-600 PBA 321

supersedes

company engine

KHD

BA 6 M 816

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Komb.-Nr. 0 401 876 282

Port closing at prestroke

**Testoil-ISO** 

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	avel		Control rod travel	Fuel delivery	Spring pre-tensioning (forque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
600	13,5+0,1	35,8-36,1	0,6(1,0)			
250	6,1-6,3	2,0-2,6	1,0(1,4)			
			1			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Interm	ediate rat	ed speed	(4)	Lowe	rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	250	5,7	600	13,5-13,6
	X =	4,0					250	6,1-6,3	230	14,7-15,3
ca.64	13,9 4,0 820	640-650 655-685 0,3-1,7					260-320	=2,0	330	13,5-13,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill load stop emp. 40°C (104°F)	Rotational- speed limitat Note: changed to)		nel delivery aracteristics	Starting f	uel delivery 5	<b>43</b> Idi	e stop Control rod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm-/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
	nown. t according to	640-650* the engine r	- ecord	- ••	-	-	-	-
					·			

Checking values in brackets

1 mm less control rod travel than col. 2

3.86

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. 4 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 KHD 20,2 d

2. Edition

PE 8 P 120 A 620/4 LS 325 RSV 250-1000 P 7 A 304 supersedes KMD ROMB.-Nr. 0 401 878 089 Company engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,0-2,1 Port closing at prestroke (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29.3-30.1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interm	ediate rat	ed speed	Control- lever deflection	Lowe	crated speed Control rod travel mm	3 To	rque control   Control rod   travel   mm
1	2	3	4	5	6	in degrees 7	8	9	10	111
loose	800	0,3-0,7	•	-	-	ca. 18	250	5,6	1000	14,9-15,0
	X	= 4,25					250	6,0-6,2	300	16,2-16,8
ca.60	13,9 4,0 1220	1040-1050 1060-1090 0,3-1,4						0= 2,0	450	14,9-15,0

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	6 Rotational- speed limitat	uel delivery naracteristics	Starting (	Starting fuel delivery 5 4a Idle sto			
rev/min	1	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
Not k	nown.	1040-1050*	-	-	100	19,5-21,0 mm RW	-	-
Adjus	t according to	the engine r	ecord:	•				
								•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

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WPP 001/4 KHD 20,2 d 1

1. Edition

PE 8 P 130 A 620/4 LS 325-1 RSV 250-1000 P 7 A 304 supersedes - KOMb.-Nr. 0 401 878 110 Company BA 8 M 816 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 411

2,0-2,10 (1,95-2,15)

mm (from BDC)

RW = 9,0-12,0 mm

Spring pre-tensioning (torque-control valve	Fuel delivery	Control rod travel	Difference	Fuel delivery	Control rod travel	Rotational speed
mm	cm³/100 strokes	mm	cm <sup>3</sup> / 100 strokes	cm <sup>1</sup> /100 strokes	mm <b>(2)</b>	rev/min
6	3	2	4	3	2	1
			0,6 (1,0)	35,8-36,1 (35,4-36,5)	13,5+0,1	750
			1,0 (1,4)	2,0-2,6 (1,7-2,9)	6,1-6,3	250
			1,0 (1,4)	(1,7-2,9)	0,1-0,3	250

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed	rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	ł	Control rod travel mm
loose	800 X =	0,3-0,7	-	-	•	ca. 22	250	5,7	1000	13,5-13,6
ca. 64	12,5 4,0 1230	1040-1050 1065-1095 0,3-1,4					250 335-39	6,1-6,3 5 = 2,0	300 500	14,7-15,3 13,5-13,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Ft	ill-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting f	uel delivery 5	(4a) Id	e stop
Test oil to	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
Test :	pecifications uest.	1040-1050*	-	-	•	*	-	-
	·					!		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 20,2 c 2

1. Edition

PE 8 P 130 A 620/4 LS 325-1

RSUV 250-800 P 10 A 318 R

supersedes... company KHD

Komb.-Nr. 0 401 878 111

BA 8 M 816

1-4-7-6-8-5-2-3 je 45 °  $\pm$  0,5 ° ( $\pm$ 0,75 °) Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1		3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,4-36,5)	),6 (1,0)			
250	6,2-6,4	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermo	ediate rate	ed speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control  Control rod  travel  mm
loose	800 X =	0,3-1,0 4,0	-	-	-	ca. 18	250 250	5,8 6,2-6,4	800 300	13,5-13,6 14,7-15,3
ca. 50	4,0	840-850 865-895 0,3-1,7					280-340	= 2,0	450	13,5-13,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Fu	II-load stop	6 Rotational- speed limitat	Rotational- speed limitat Sa Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stop		
Test oil te rev/min	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
<u> </u>	2	3	4	5	6	/	8	19
	pecifications uest.	840-850 *	-	-	-	-	-	-
							•	
							i	}
		1	ŀ	1	ŀ			1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 KHD 20,2 g

1. Edition

RSUV 250-600 P 8 A 321 R PE 8 P 130 A 620/4 LS 325-1

supersedes: **KHD** company

Komb.-Nr. 0 401 878 114 1-4-7-6-8-5-2-3 je 45 ° ± 0,5 ° (± 0,75 °)

BA 8 M 816 engine

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm³/100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
600	13,5+0,1	35,8-36,1 (34,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interm	ediate rate	ed speed	Control- lever deflection in degrees	Lower	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	<sup>2</sup> 775 X = 4	0,3-1,0 ,0	4	5 -	6 	ca. 25	250 250	5,7 6,1-6,3	600	13,5-13,6 14,7-15,3
ca. 64	12,5 4,0 820	640-650 655-685 0,3-1,7			ı		200-3	20 = 2,0	350	13,5-13,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop .	6 Rotational- speed limitat		uel delivery paracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	Control rod travel mm
	specifications quest.	640-650 *	-	-	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

BA 8 M 816

WPP 001/4 KHD 20,2 c 3

supersedes \_

engine:

company. KHD

1. Edition

PE 8 P 130 A 620/4 LS 325-1 RSUV 250-800 P 10 A 347 R

Komb.-Nr. 0 401 878 113 1-4-7-6-8-5-2-3 je 45°  $\stackrel{+}{=}$  0,5 ° ( $\stackrel{+}{=}$  0,75 °)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

(1,95-2,15)

mm (from BDC)

RW = 9,0-12,0 mm

Spring pre-tensioning (torque-control valve) mm 6	elivery O strokes	Fuel de cm*/100 3	Control rod travel mm 2	Difference cm <sup>3</sup> / 100 strokes 4	Fuel delivery cm <sup>3</sup> /100 strokes 3	Control rod travel	Rotational speed rev/min
	ð			0,6 (1,0)	35,8-36,1 (35,5-36,5)	13,5+0,1	750
				1,0 (1,4)	2,0-2,6 (1,7-2,9)	6,1-6,3	250
					(1,7-2,9)	,	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	l rev/min	Interme	diate rate	d speed	4	Lower	rated speed	(3) To	rque control
Degree of	Control rod	Control rod			1	Control-	1	Control rod travel		Control rod travel
deflection of control lever	mm	mm nav/min				lever deflection	rev/min	mm	rev/min	mm
1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	250	5,7	800	13,5-13,6
	X =	4,0	į			Ì	250	6,1-6,3	300	14,7-15,3
ca.56	12,5 4,0 1025	840-850 865-895 0,3-1,7					280-34	0 = 2,0	450	13,5-13,6

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational- speed limital  Speed limital			Starting f	uel delivery 5	4a Idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travet mm
	specifications quest.	840-850 *	-	-	•	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 KHD 20.2 b 1

1. Edition

Ē'n

PE 8 P 130 A 420 LS 325-1 RS 250/1000 P 1 A 422 R Supersedes Company Values only apply to test nozzle-and-holder assembly engine 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,95-2,15)

mm (from BDC)

RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3/1</sup> 00 strokes	mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,6 (1,4)			
		·				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	d rev/min	Interme	ediate rate	d speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel		Control rod travel
lever	2	3	4	5	6	in degrees	8	mm 9	rev/min 10	mm 11
loose	800	0,3-0,7	-	-	-	FH ca.23	250	6,2	1000	13,5-13,6
57	x = 5	,0					400-460	= 2,0	420 550	14,7-15,3 13,5-13,6
VHca.57 FH full	12,5 4,0	1040-1050 1095-1125 0,3-1,4			•	150-200			550	13,5-13,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F) cm³/1000 strokes	Rotational- speed (imitat. Note: changed to) rev/min		el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting to the starting to th	cm <sup>3</sup> /1000 strokes	<b>69</b>	e stop Control rod travel mm
Test	specifications quest.	1040~1050*	-	-	6 -	-	-	9
		_						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 15,2 e1 1. Edition

Er

PE 6 P 130 A 420 LS 399-1 RSV 250-1000 P 7 A 460 su Komb.-Nr. 0 401 876 279 cc Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes

company
engine

Supersedes

KHD

BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	100 strokes	mm	cm-//100 strokes	mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed		Intermediate rated speed			(4)	Lower	3 Torque control		
Degree of deflection	travel	Control rod travel				Control- lever	[	Control rod travel		Control rod travel
of control lever	mm	mm rev/min	1.			deflection in degrees	rev/min	mm	rev/min	mm
<u> </u>	2	3		<u> </u> 5	6	l'	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x =	5,0					250	6,1-6,3	300	14,7-15,3
ca.64	12,5 4,0 1230	1040-1050 1065-1095 0,3- 1,4			1		355-4	15=2,0	500	13,5-13,6

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat	(38) FL	uel delivery paracteristics	Starting I	uel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
	0,7 bar specifications quest.	1040-1050*	•	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 20,2 f

En

PE 8 P 120 A 620/4 LS 400 RSV 250-1000 P7A 460 Komb.-Nr. O 401 878 100 1-4=7-6-8-5-2-3 je  $45^{\circ}-0.5^{\circ}(-0.75^{\circ})$  Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersede 6 • 83 company KHD engine BA 8 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 - 2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
750	14,9+0,1	29,5-29,9 (29.3-30.1)	0,5 (0,9)			
250	6,0-6,2	2,0-2,6 (1,7-2,9)	0,8 (1,2)			
					j	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	l rev/min	Intermed	diate rated	d speed	4	Lowe	r rated speed	3 Torque control	
Degree of deflection	Control rod travel	Control rod travel			1	Control-		Control rod travel		Control rod travel
of control	mm	mm rev/min		ł		lever deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	250	5,6	1000	14,9-15,0
	x = 5	,75					250	6,0-6,2	300	
ca. 67	13,9	1040-1050					345-40	5 = 2,0	450	14,9-15,0
<b>(28)</b>	4,0	1080-1110								
<b>6</b>	1250	0,3-1,4								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	3a Fu	el delivery aracteristics	Starting f	uel delivery 5	<b>4a</b> Idl	e stop
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Not kr Adjus	ŀ	1040-1050* he engine r	- ecords	•	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 20,2 f1

1. Edition

RSV 250-1000 PE 8 P 130 A 620/4 LS 400-1

supersedes"

Komb.-Nr. 0 401 878 109

company KHD

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je  $45^{\circ} + 0.5^{\circ} (\pm 0.75^{\circ})$ Values only apply to test nozzle-and-holder assembly

**BA8M816** engine

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)

2,0-2,1 mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm³/100 strokes	mm
	2	35 8-36 1	9 0 0 0 0	2	3	6
750	13.5+0.1	35,8-36,1 (35,4-36,5)	0,6(1,0)			_
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	r rated speed		Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection	Control rod	Control rod   travel		1		Control-		Control rod travel		Control rod travel
of control lever	mm	mm rev/min			١.	deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 22	250	5,7	1000	13,5-13,6
	x =	5,0					250	6,1-6,3	300	14,7-15,3
ca. 64	4,0	1040-1050 1065-1095					335-395	=2,0	500	13,5-13,6
	1230	0,3-1,4					l	i		و پېر

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat	39 Fu	net delivery aracteristics	Starting fuel delivery 5 4a Idle stop				
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm	
LDA	0,7 bar	1040-1050*	•	•	-	<b>-</b>	-	-	
	specifications equest.								

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 15,2 q 1. Edition

PE 6 P 130 A 420 LS 484 Komb.-Nr. 0 401 876 289 RSUV 300-1000 P 4 A 304-1

supersed∈s company KHD

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

BA6M816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,10 (1.95-2.15)

mm (from BDC); RW = 9,0-12,0 mm

speed	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-y</sup> 100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
30ü	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed	rev/min  Control rod	Interme	diate rated	speed I	Gontrol:	Lower	rated speed	3 10	rque control
deflection of control lever	travel mm	travet mm rev/min	!			lever deflection in degrees	rev/min	travet mm	rev/min	travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	1000	15,0-15,1
	X =	5,0					300 365-42	5,6-5,8	350 500	16,2-16,8 15,0-15,1
ca.64	14,0 4,0 1260	1040-1050 1095-1125 0,3-1,7					303-48	J-2,0	300	13,0-13,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	uel delivery 5	(4a) Id	le stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
	specifications quest.	1040-1050*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

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F23

WPP 001/4 KHD 15,2 g

1. Edition

PE 6 P 130 A 420 LS 484 RSUV 250-600 P 8 A 321 R
Komb.-Nr. 0 401 876 286
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
600	15,0-15,1	35,8-31,6 (35,5-36,4)	0,6(1,0)	2	3	6
250	5,7-5,9	2,0- 2,6 (1,7- 2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			Lower rated speed			3 Torque control	
Degree of deflection	Control rod travel		1			Control- lever		Control rod		Control rod travel
of control lever	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	775	0,3-1,0	_	_	-	ca. 25	250	5,3	600	15,0-15,1
	x = 4,0						250 260-32	5,7-5,9 0=2,0	230 330	16,2-16,8 15,0-15,1
ca 65 <b>(2a</b> )	14,0 4,0 825	540-650 660-690 0,3-1,7						·		-

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting fuel delivery 5 4a Idle stop			
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travet mm
	specifications quest.	640-650*	-	<del>-</del>	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 KHD 15,2 g 2

1. Edition

RSUV 300-750 P 9 A 322-1 PE 6 P 130 A 420 LS 484 Komb.-Nr. 0 401 876 285

supersedes KHD

company **BA6M 816** 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

2,0-2,1(1,95-2,15)Port closing at prestroke

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			
·						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed		Interme	ediate rat	ted speed	(4)	Lowe	r rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-		-	ca.25	300	5,2	750	15,0-15,1
		= 4.0					300	5,6-5,8 5= 2,0	280	16,2-16,8
ca.62	14,0 4,0 980	790-800 815-845 0,3-1,7					323-30	2,0	450	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		3a) Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm	
	specifications quest.	%90-800*	-	-	-	-	-	-	
						<u>.</u>			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 15,2g3

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 322-2

Komb.-Nr. 0 401 876 326

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD

engine BA6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm <sup>1</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm*/100 strokes	Spring pre-tensioning (torque-control valve) mm
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3) 10	3 Torque control	
Degree of deflection	Control rod travel	travel				Control- lever		Control rod travel		Control rod travel	
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	11	
loose	800	0,3-1,0	-	•	-	ca. 24	300	5,2	750	15,0-15,1	
	x_	= 4,0					300 320-38	5,6-5,8 0=2.0	280 450	16,2-16,8 15,0-15,1	
ca. 53 (2a)	14,0 4,0 980	790-800 830-860 0,3-1,7					<b>32</b> 0 00	,	450	15,0-15,1	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

0	I-load stop	6 Rotational- speed limitat.	(3a) Fu	iel delivery aracteristics	Starting fuel delivery 5 4a Idle stop			e stop
1	,	Note: changed to) rev/min 3	rev/min	csn3/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
Test on re	specifications equest.	790-800		-	_	-	_	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

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WPP 001/4 KHD 15,2g4

1. Edition

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 347-1 supersedes Komb.-Nr. 0 401 876 290 KHD company Values only apply to test nozzle-and-holder assembly **BA6M816** engine 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 2,0-2,1

Port closing at prestroke

Testoil-ISO 411

(1.95-2.15)

mm (from BDC)

; RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm-//100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	l rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever	İ	Control rod travel		Control rod travel
of control	mm	mm rev/min			١.	deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x = 2,0							5,6-5,8 0 = 2,0	280 450	16,2-16,8 15,0-15,1
ca.66	14,0 4,0 1230	1040-1050 1070-1100 0,3-1,7						_,		·

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ili-load stop	6 Rotational- speed limitat	(3a) F <sub>L</sub>	iel delivery paracteristics	Starting t	uel delivery 5	4a) Idle stop		
Test oil te rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
Test :	pecifications uest.	1040-1050*	-	-	-	-	j	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

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WPP 001/4 KHD15,2g6
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-750 POA 353 Komb.-Nr. 0 401 876 292 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes K

company KHD

engine B A6M816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm 1/100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	r rated speed	rev/min	Interm	ediate rat	led speed	<b>(4)</b>	Lower	rated speed	3 Torque control		
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11	
loose	800	0,3-0,7	-	-	_	ca. 25	300	5,7	750	15,0-15,1	
	х	= 4,0				ļ	300	5,6-5,8 50=2,0	280 450	16,3-16,9 15,0-15,1	
ca. 62	14,0 4,0 980	790-800 815-845 0,3-1,4					300-3	00=2,0	430	10,0-13,1	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat	3a Fu	nel delivery aracteristics	Starting f	uel delivery 5	(4a) Idle stop Control rod travel		
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4_	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9	
	specifications quest.	790-800*	•	-	-	<b>-</b>	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

WPP 001/4 KHD 15,2g7
1. Edition

En

PE 6 P 130 A 420 LS 484 RSUV 300-1000 POA 354 Komb.-Nr. 0 401 876 288 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD
company KHD
engine BA 6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)			
rev/min	mm (2)	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm 1/100 strokes	mm			
1	2	3	4	2	3	6			
750	15,0+0,1	35,8-36,1 (35,5-36,5	0,6(1,0	)					
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4	)					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

•		Interme	ediate rate	d speed				rque control	
travel	travel			1	Control- lever	]	Control rod travel		Control rod travel
mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
800	0,3-1,0	-	<del>-</del>		ca.22	300	5,2	1000	15,0-15,1
x = 2,0						300	5,6-5,8		16,2-16,8
14,0						320-3	80 = 2,0	450	15,0-15,1
1230									
	Control rod travel mm 2 800 x 14,0 4,0	mm mm rev/min 2 3  800 0,3-1,0  x = 2,0  14,0 1040-105 4,0 1070-110	Control rod travel mm rev/min 2 3 4  800 0,3-1,0 - x = 2,0  14,0 1040-1050 4,0 1070-1100	Control rod travel mm rev/min 2 3 4 5 800 0,3-1,0   x = 2,0 14,0 1040-1050 4,0 1070-1100	Control rod travel mm rev/min 2 3 4 5 6 800 0,3-1,0	Control rod travel mm rev/min 2 3 4 5 6 Control lever deflection in degrees 7	Control rod travel mm rev/min 2 3 4 5 6 Control lever deflection in degrees 7 rev/min 8 8 800 0,3-1,0 Ca.22 300 320-3 4,0 1070-1100	Control rod travel mm rev/min 2	Control rod travel mm rev/min 2 3 4 5 6 7 Control rod travel mm rev/min 3 4 5 6 7 Control rod travel mm rev/min in degrees 7 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

169	ull-load stop emp. 40°C (104°F)	6 Rotational- speed limitat	11361	el delivery aracteristics	Starting f	uel delivery 5	4a Idle stop	
rev/min	cm <sup>1</sup> /1000 strokes	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
	specifications quest.	1040-1050	)* -	-	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2



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WPP 001/4 KHD 15,2 h

1. Edition

PE 6 P 130 A 420 LS 484-1

RSV 300-1000 P4A 460-1

supersedes KHD company

Komb.-Nr. 0 401 876 291

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company: BA 6 M 816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-150 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
15,0+0,1	35,8-36,1	0.6 (1.0)	2	3	6
5,6-5,8		7			7
	(1,1				
	mm 2 15,0+0,1	travel mm 2 cm³/100 strokes 3 15,0+0,1 35,8-36,1 (35,5-36,5)	travel mm 2 cm <sup>3</sup> /100 strokes 2 15,0+0,1 35,8-36,1 (35,5-36,5) 0,6 (1,0)	travel mm 2 cm³/100 strokes cm³/ 100 strokes 4 cm³/ 100 strokes mm 2 15,0+0,1 35,8-36,1 (35,5-36,5) 0,6 (1,0)	travel mm 2 cm³/100 strokes 2 cm³/100 strokes 4 cm³/ 100 strokes mm 2 cm³/100 strokes 3 15,0+0,1 35,8-36,1 (35,5-36,5) 0,6 (1,0)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed	l rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	1(3)	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever	1	Control rod travel		Control rod travel
of control lever 1	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min ව	9 9	rev/min	mm 11
loose	800	0,3-0,7	-	-	••	ca. 26	300	5,2	1000	15,0-15,1 16,2-16,8
	x = 5	5,0					300	5,6-5,8	350 500	15,0-15,1
ca. 64	14,0 4,0 1260	1040-1050 1095-1125 0,3-1,4		•			365-4	25 = 2,0		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat		rel delivery aracteristics	Starting fuel delivery 5			e stop  Control rod
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
	specifications quest.	1040-1050*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. 

6. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 KHD 20,2 h

1. Edition

PE 8 P 130 A 620/4 LS 485 Komb.-Nr. 0 401 878 128

RSV 300-1000 P4A 304-1

supersedes =

1-4-7-6-8-5-2-3 je 45°

+ 0,5° (+ 0,75°)

KHD company BA 8 M 816 engine

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

	( )	, , , , , , , , , , , , , , , , , , , ,				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm://100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)		-	
			<b>.</b>			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	r rated speed	rev/min	Interme	ediate rate	d speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection	Control rod travel	Control rod travel			1	Control- lever		Control rod travel		Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	.mm 11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5,2	1000	
	x = 5	5,0					300	5,6-5,8	350 500	16,2-16,8 15,0-15,1
ca. 64	14,0	1040-1050		,			365-42	5 = 2,0		
23	4,0 1260	1095-1125 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	(4a) Idi	e stop
1	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	travel mm
	specifications quest.	1040-1050*	-	-	-	₹'	•	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany tmprime en République Fédérale d'Alfemagne par Robert Bosch GmbH.

WPP 001/4 KHD 20,2 1 1

1. Edition

RSUV 250-600 P8A 321 R PE 8 P 130 A 620/4 LS 485

Komb.-Nr. 0 401 878 121

1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersede<sup>®</sup> company KHD BA 8 M 816 engine

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm1/100 strokes	cm <sup>1</sup> / 100 strokes	mm	cm//100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
250	5,7-5,9	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	ediate rate	d speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	11 5 1	rque control   Control rod travel   mm
loose	775 x = 4	0,3-1,0 4,0	-	<u>-</u>	<del>-</del>	ca. 25	250 250	5,3 5,7-5,9	600 230 350	15,0-15,1 16,2-16,8 15,0-15,1
ca. 65	14,0 4,0 825	640-650 660-690 0,3-1,7					260-32	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	uel delivery 5	(4a) Idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
	pecifications uest.	640-650*	<del>-</del> .	-	£a	<u>-</u>	-	-

Checking values in brackets

\* 1 mm less control rod travel than coi 2

WPP 001/4 KHD 20,2 12

1. Edition

PE 8 P 130 A 620/4 LS 485 Komb.-Nr. 0 401 878 122 1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)

supersedes. company KHD

BA 8 M 816 engine

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm /100 strokes	mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

RSUV 300-750 POA 322-1

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x = 4	0,3-1,0 4,0	-	-	-	ca. 25	300 300	5,2 5,6-5,8	750 280 450	15,0-15,1 16,2-16,8 15,0-15,1
ca. 61	14.0 4.0 980	790-800 815-845 0,3-1,7		,		وم	315-37	5 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp 40°C (104°F)	Rotational- speed limitat	nel delivery aracteristics	Starting fuel delivery 5			e stop Control rod	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
	specifications quest.	790-800*	-	-	<del>.</del>	-	-	-
			_					

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 KHD 20,2 1

1. Edition

PE 8 P 130 A 620/4 LS 485 Komb.-Nr. 0 401 878 137

RSUV 300-750 POA 322-2

supersedes KHD company BA 8 M 816

1-4-7-6-8-5-2-3 je 45° ± 0,5° (± 0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

mm (from BDC)

RW = 9.0-12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>1</sup> /100 strokes	mm
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of dellection of control lever 1	Control rod travel mm	rev/min Control rod travel mm rev/min 3	Interm	ediate rate	ed speed	Control- lever deflection in degrees 7	Lowe rev/min 8	crated speed   Control rod   travel   mm	(3) To	Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,2	750	15,0-15,1
	X = 4	4,0					300	5,6-5,8	280 450	16,2-16,8 15,0-15,1
ca. 53	14,0 4,0 980	790-800 830-860 0,3-1,7					320-3	0 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational-speed limitat  Note:  Rotational-speed limitat			Starting t	fuel delivery 5	4a Idle stop	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control root travel mm
	specifications quest.	790-800*	-	-	<i>v</i>	-	•	-
					ĺ			

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

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WPP 001/4 KHD 20,2i3 1. Edition

PE 8 P 130 A 620/4 LS 485 Komb.-Nr. 0 401 878 127

RSUV 300-1000 POA 347-1

1-4-7-6-8-5-2-3 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$  Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

company KHD engine BA8M816

supersedes

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO** 

2,0-2,1 (1.95-2.15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm1/100 strokes	mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			
300	5,6-5,8	(1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Intermed	diate rated	speed	4	Lower	rated speed	3 Torque control	
Degree of deflection	Control rod travel	Control rod travel		1		Control-		Control rod travel		Control rod travel
of control lever	mm	mm rev/min			١.	deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 22	300	5,2	1000	15,0-15,1
	x =	2.0					300	5,6-5,8	280	16,2-16,8
ça 66	14,0	1040-1050					320-38	U=Z,U	450	15,0-15,1
<b>(2a)</b> 66	4,0 1230	1070-1100 0,3-1,7								

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat  Rotational-speed limitat			Starting t	fuel delivery 5	4a) 1dle stop		
rev/min	cm <sup>3</sup> /1000 strakes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod trave; mm	
	specifications quest.	1040-1050*	-	-	-	-	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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WPP 001/4 KHD 20,2i4
1. Edition

E n

PE8P 130 A 620/4 LS 485

RSUV 300-750 POA 347-3

supersede5

Komb.-Nr. 0 401 878 135

1-4-7-6-8-5-2-3 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company KHD

Values only apply to test nozzle-and-holder assembly

engine BA 8 M 816

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm//100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35-5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7 <b>-</b> 2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	er rated speed	f rev/min	Intern	nediate rat	led speed	(4)	Low	er rated speed	(3) 10	orque control
Degree of deflection of control	Control rod travet	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel	rev/min	Control rod travel
lever 1	2	3	4	5	6	in degrees	8	9	10	11
loose	800	0,3-1,0	] -	-	•	ca. 24	300	5,7	750	15,0-15,1
	X	= 4,0					300	5,6-5,8	280	16,2-16,8
ca.53	14,0 4,0 980	790-800 820-850 0,3-1,7					300-3	50=2,0	450	15,0-15,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-toad stop emp. 40°C (104°F)	Rotational- speed limitat		net delivery paracteristics	Starting f	uel delivery 5	(4a) Idi	e stop  Control rod
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	travel mm 9
	specifications quest.	790-800*	-	-	-	-	-	~

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

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BOSCH

WPP 001/4 KHD 20,2i5

1. Edition

RSUV 300-750 P9A 353 PE 8 P 130 A 620/4 LS 485 Komb.-Nr. 0 401 878 124 1-4-7-6-8-5-2-3 je  $45^{\circ}+0.5^{\circ}$  (+  $0.75^{\circ}$ ) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes<sup>®</sup> KHD company BA8M816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <b>(2)</b>	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm//100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rat	ed speed	Controt- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm  9	3 To	rque control   Control rod   travel   mm   11
loose	800 x=	0,3-1,0 4,0	-	•	-	ca.25	300	5,7 5,6-5,8	750 280	15,0-15,1 16,2-16,8
ca.62	14,0 4,0 980	790-800 815-845 0,3-1,7					300-3	50=2,0	450	15,0-15,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

ill-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting f	uel delivery 5	4a) Idle stop		
emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
specifications quest.	790-800*	-	<b>-</b>	-	-	•	• -	

Checking values in brackets

\* 1 mm less control rod travel than col 2



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WPP 001/4 KHD 20,216 1. Edition

En

PE8P130A 620/4 LS 485 RSUV 300-1000 POA 354

Komb.-Nr. 0 401 878 123

1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD company BA8M816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Intermed	diate rated	speed	(4)	Lowe	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever	mm	mm rev/min	٥	5	6	deflection in degrees	rev/min	mm 9	rev/min	mm 11
<u> </u>	2	3	4	19	10	<u>'</u>	0	9	110	
loose	800	0,3-1,0	-	-	-	ca.22	300	5,2	1000	15,0-15,1
	X=2	2,0					300	5,6-5,8	280	16,2-16,8
ca.66	14,0	1040-1050					320-30	30=2,0	450	15,0-15,1
<b>2a</b>	4,0 1230	1070-1100 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting f	uel delivery 5	4a Idle stop	
Test oil to rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
	specifications quest.	1040-1050*	-	-	-	φ <b>-</b>	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 20,2 k 1. Edition

En

PE 8 P 130 A 620/4 LS 485 RS 250/1000 P1A 422 R

Komb.-Nr. 0 401 878 125

1-4-7-6-8-5-2-3 je 45° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)		
rev/min	mm (2)	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm1/100 strokes	mm		
1	2	3	4	2	3	6		
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0					
250	5,8-6,0	2,0-2,6	1,0(1,4					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

$\mathbf{R}^{\bullet}$	r rated speed		Interm	ediate r	ated speed	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel inm 2	travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose		0,3-0,7 = 5,0	•			FH ca.	24 · 250 250	, ,	1000 420	, ,
FH full	14,0 4,0 1270	1040-1050 1105-1135 0,3-1,4			*		400-	460 = 2,0	550	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	pil-load stop	Rotational-speed limitat   Representation (3a) Fuel delivery characteristics			Starting fuel delivery 5 4a Idle			e stop	
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
	specifications quest.	1040-1050*	-	-	-	-	_	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 30,4 m

<u>En</u>

PE 12 P 130 A 920 RS 486 RSUV 300-600 P8A 322 R Komb.-Nr. 0 401 870 081 1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company. HD engine: BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO** 

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm mm	cm <sup>3</sup> /100 strokes	mm
1.	2	3	4	2	3	6
600	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	r rated speed		Interme	diate rate	speed	4	Lowe	r rated speed	(3) To	rque control
Degree of deflection of control	travel	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	×	= 4,0					300 305-3	5,6-5,8 65=2,0	220 350	16,2-16,8 15,0-15,1
ca. 65	14,0 4,0 820	640-650 660-690 0,3-1,7		•						c

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b)</b> Fu	il-load stop	6 Rotational-	6 Rotational Speed limitat Speed limitat			fuel delivery 5	<b>4a</b> ) Id	le stop
Test oil to rev/min	emp. 40°C (104°F)	Note: changed to) rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
	specifications quest.	640-650*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 30,4 m 1 1. Edition

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PE 12 P 130 A 920 RS 486 RSUV 300-750 P9A 322 R Komb.-Nr. 0 401 870 082 1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes company KHD

engine BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1,	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	Lower rated speed 3 Torque control				
Degree of deflection	Control rod travel	Control rod travel				Control-	1	Control rod travel		Control rod travel
of control	mm	mm rev/min				deflection in degrees	rev/min	mm	rev/min	mm
1	ź	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 26	300	5.7	750	15,0-15,1
	Х :	= 4,0					300 300-35	5,6-5,8	280 450	16,2-16,8 15,0-15,1
ca 63	14,0 4,0	790-800 815-845		1			300-30	7-2,0		10,0-10,1
	980	0,3-1,7	L				l	<u> </u>	<u> </u>	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-foad stop emp. 40°C (104°F)	Note:		el delivery aracteristics	Starting t	uel delivery 5	ldle stop  Control rod	
rev/min 1	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
	specifications equest.	790-800*	-	-	_	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

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40

WPP CO1/4 KHD 30,4 m 2

1. Edition

En

PE 12 P 130 A 920 RS 486 RSUV 300-750 POA 322-3 Komb.-Nr. 0 401 870 087 1-10-5-7-2-11-6-8-3-12-4-9 je 30° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder assembly

supersedes KHD

engine BA 12 M 816

1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>1</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm (2)	cm <sup>1</sup> /100 strokes 3	100 strokes	mm 2	cm 1100 strokes	mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Port closing at prestroke

Testoil-ISO

1 Uppe	r rated speed	l rev/min	Interme	diate rat	ed speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	a	5	6	Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
10050	800	0,3-1,0	†	<u> </u>	<u> </u>	ca. 24	300	5,7	750	15,0-15,1
loose	000	0,3-1,0		_	_	Ca. 24		<del> </del>	4	,
	X	= 4,0					300 300-35	5,6-5,8	280 450	16,2-16,8 15,0-15,1
ca. 53	14,0 4,0 980	790-800 820-850 0,3-1,7					300-33	0-2,0	430	13,0013,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	il-load stop	Rotational- speed limitat 3a Fuel delivery characteristics			Starting fuel delivery 5			4a Idle stop		
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes		Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	s rev/min	Control rod travel mm		
1	2	3	4	5	6	7	8	9		
	pecifications uest.	790-800*	-	-	-	-	-	_		
	į				ļ	Ì				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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WPP 001/4 KHD 30.4 m 4

1. Edition

PE 12 P 130 A 920 RS 486

RSUV 300-750 P 9 A 350

supersede 5 company KHD

Komb.-Nr. 0 401 870 084

1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

BA 12 M 816 engine

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,0-2,1
Port closing at prestroke (1,95-2,15) mm

Testoil-ISO 4113

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm//100 strokes	mm
1	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	ediate ratè	d speed	(4)	Lower	rated speed	3 Torque control	
Degree of deflection	Control rod travel	Control rod travel		ľ		Control- lever		Control rod travet		Control rod travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
loose	800	0,3-1,0	-	-	<u> </u>	ca. 26	300	5,2	750	15,0-15,1
	X =	4,0					300	5,6-5,8	280	16,2-16,8
ca. 63	14,0 4,0 980	790-800 815-845 0,3-1,7					315-37	5=2,0	450	15,0-15,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ili-load stop	6 Rotational- speed limitat	(3a) Fu	iel delivery paracteristics	Starting fuel delivery 5			4a Idle stop		
Test oil to	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to} rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	1 1	Control rod travel mm		
1	2	3	4	5	6	7	8	9		
	specifications quest.	790-800*	-	-	-	-	-	_		

Checking values in brackets

\* 1 mm less control rod travel than col 2



40

WPP 001/4 KHD 30,4 m 5

1. Edition

PE 12 P 130 A 920 RS 486

RSUV 300-750 P 9 A 350-1

supersedes

Komb.-Nr. 0 401 870 088

1-10-5-7-2-11-6-8-3-12-4-9 30° ± 0,5° (± 0,75°)

company KHD engine BA 12 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at		2,0-2,1 1,95-2,15)	mm (from BDC)	RW = 9,0 - 12,0 mm				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)		
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	ന്ന	cm <sup>1</sup> /100 strokes	mm		
1		3	4	2	3	6		
750 -	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)					
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-ISO 4113

1 Uppe	r rated speed	rev/min	Interme	diate rate	ed speed	4	Lower	rated speed	(3) 10	rque control
Degree of	Control rod	Control rod	ŀ	1		Control-		Control rod travel		Control rod travei
deflection of control	mm	mm rev/min		1		lever dellection	rev/min	mm	rev/min	mm
1 lever	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	1 -	-	-	ca.24	300	5,2	750	15,0-15,1
	X =	4,0	1				300	5,6-5,8	280	16,2-16,8
22 52	14.0	790-800	1				315-37	5=2,0	450	15,0-15,1
ca. 53	14,0 4,0 980	830-860 0,3-1,7			à					
	300	0,3-1,7				<u></u>	<u> </u>	<u> </u>	<u> </u>	L

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ult-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting fuel delivery 5 4a Idle stop			e stop
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
•	specifications quest.	790-800*	-	-	-	, <b>-</b>	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

WPP 001/4 KHD 30,4 m 6

1. Edition

PE 12 P 130 A 920 RS 486 Komb.-Nr. 0 401 870 085

RSUV 300-1000 POA 352

supersedes\_

company KHD

BA 12 M 816 engine

1-10-5-7-2-11-6-8-3-12-4-9 je 30°±0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>1</sup> /100 strokes	mm
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)	2	3	6
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

(1) Uppe	er rated speed		Intern	ediate i	ated speed	(4)	Lower	rated speed	(3) 10	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-		-	ca. 22	300	5,2	1000	15,0-15,1
	X =	2,0					300	5,6-5,8	280	16,2-16,8
ca. 67	14,0 4,0 1230	1040-1050 1070-1100 0,3-1,7					325-38	5=2,0	450	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat	(3a) Fu	uel delivery paracteristics	Starting t	uel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
	specifications quest.	1040-1050*	-	-	-	-	-	-
		÷.						

Checking values in brackets

\* 1 mm less control rod travel than col 2

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WPP 001/4 KHD 30,4 n

1. Edition

PE 12 P 130 A 920 RS 486 Komb.-Nr. 0 401 870 086

RS 250/1000 P 1 A 422 R

supersedes KHD

1-10-5-7-2-11-6-8-3-12-4-9 je 30°±0,5° (± 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

company BA 12 M 816

A. Fuel Injection Pump Settings

Port closing at prestroke **Testoil-ISO 4113** 

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod trave!	Fuel delivery	Spring pre-tensioning (torque-control valve) mm
750	15,0+0,1	35,8·36,1 (35,5-36,5)	0,6(1,0)	2	3	6
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	r rated speed	rev/min	Intermediate rated speed			Lower rated speed			3 Forque control	
Degree of deflection of control	travel mm	travel	ł			Control- lever deflection	rev/min	travel	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-0,7	-		-	FH ca.24	250	5,8	1000	15,0-15,1
VHca.58	X =	5,0					250	5,7-5,9		10,2-16,8
FH full	14,0   4,0	1040-1050 1105-1135 0,3-1,4					400-46	J=Z,U	550	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-toad stop	6 Rotational- speed limitat		rel delivery paracteristics	Starting I	luel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1	specifications uest.	1040-1050*	•	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung.

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WPP 001/4 KHD 20,2 1

1. Edition

PE 8 P 130 A 620/4 LS 488 Komb.-Nr. 0 401 878 126

RSV 300-1000 P 4 A 460-1

supersedes KHD

company BA 8 M 816

1 - 4 - 7 - 6 - 8 - 5 - 2 - 3 je 45°  $^{\pm}$ 0,5° ( $^{\pm}$ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm*/100 strokes	mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
250	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Interme	ediate rate	ed speed	(4)	Lower	rated speed	(3) 10	orque control
Degree of deflection of control lever	travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 26	250	5,2	1000	15,0-15,1
	X =	5,0					250	5,6-5,8	350	16,2-16,8
ca. 64	14,0 4,0 1260	1040-1050 1095-1125 0,3-1,4					365-42	5=2,0	500	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat		uel delivery paracteristics	Starting Idle	fuel delivery 5	(4a) Idi	le stop
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min	Control rod travel mm
LDA Test s on red	0,7 bar specifications uest.	1040-1050*	<b>-</b>	-	-	<b>-</b>	<b>-</b>	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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## D. Adjustment Test for Manifold Pressure Compensator

KHD 20,2 1

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
-	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 PLS 488 +RSVP 4 A 460-1	0,90	0,45 0	15,0-15,1 14,0-14,1 13,0-13,1

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

G24

WPP 001/4 KHD 40,5 g 1

1. Edition

RSUV 300-600 P 8 A 322 R

1-6-4-5-8-3-2-7

company KHD

supersede 5

 $0-75-90-120-210-225-315-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

BA 16 M 816

PE 8 P 130 A 920/5 RS 489

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 878 131

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm //100 strokes	mm
600	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)	2	3	6
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) to	rque control
Degree of deflection	Control rod travel	Control rod travel				Control-		Control rod travel		Control rod travel
of control lever	mm	mm rev/min			١.	deflection in degrees	rev/min	mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 30	300	5,2	600	15,0-15,1
	Х =	4,0					300	5,6-5,8	220	16,2-16,8
			1				305-36	5=2,0	350	15,0-15,1
ca. 65		640-650						İ		
(2a)	4,0 825	660-690 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Ft	ull-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting t	fuel delivery 5	(4a) Id	le stop
rev/min	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min	cm³∮i000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
on re	specifications quest. operates in	640-650*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

3.86

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WPP 001/4 KHD 40,5 g 3

1. Edition

PE 8 P 130 A 920/5 RS 489

RSUV 300-750 POA 322-3

supersedes-

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7  $0 - 75 - 90 - 120 - 210 - 225 - 315 - 345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

company KHD engine. BA 16 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 878 136

A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

(1.95-2.15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>1</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
<b>F</b>	2	3	4	2	3	6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	r rated speed		Intermediate rated speed			4	Lower	(3) 10		
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 24	300	5,7	750	15,0-15,1
	X =	4,0					300	5,6-5,8	280	16,2-16,8
ca. 53	14,0	790-800	]				300-3	0=2,0	450	15,0-15,1
29	4,0 980	820-850 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	uil-load stop	6 Rotational- speed limitat		uel delivery naracteristics	Starting (	fuel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
on re	specifications quest. operates in m.	790-800*	-	<del>-</del>	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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40

WPP 001/4 KHD 40,5 g 4

1. Edition

PE 8 P 130 A 920/5 RS 489

RSUV 300-1000 POA 348

1-6-4-5-8-3-2-7

 $0-75-90-120-210-225-315-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

supersedes KHD COMPANY BA 16 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 878 129

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,95-2,15)

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes	mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	er rated speed		Intermediate rated speed			(4)	Lower	rated speed	3 Torque control		
Degree of deflection	travel	Control rod travel		Í	ļ	Control- lever		Control rod travel		Control rod travel	
of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min	mm 11	
loose	800	0,3-1,0	-	<del></del>	-	ca. 18	300	5,2	1000	15,0-15,1	
	X =	2,0				j	300	5,6-5,8	280	16,2-16,8	
ca. 67	14,0	1040-1050					325-38	5=2,0	450	15,0-15,1	
(2a)	4,0	1070-1100									
	1230	0,3-1,7									

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	6 Rotational- speed limitat		uel delivery paracteristics	Starting (	uel delivery 5	(4a) Idi	e stop
rev/min	cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
on rec	operates in	1040-1050*	-	<del>-</del>	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

40

WPP 001/4 KHD 40,5 g 5

1. Edition

PE 8 P 130 A 920/5 RS 489 RSUV 300-750 P 9 A 350 1-6 - 4-5 - 8 - 3 - 2 - 7 0-75-90-120-210-225-315-345° ± 0,5° Y± 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes KHD company BA 16 M 816

engine Komb.-Nr. 0 401 878 133

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9.0 - 12.0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm /100 strokes	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			
300	5,6-5,8	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	er rated speed	l rev/min	Interme	ediate rate	d speed	4	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	rev/min	Control rod travel mm
1oose	800	0,3-1,0	-	-	<del>-</del>	ca. 26	300	5,2	750	15,0-15,1
	x = 4	0					300	5,6-5,8	280	16,2-16,8
ca. 63	14,0 4,0 980	790-800 815-845 0,3-1,7					315-37	<b>5</b> = 2,0	450	15,0-15,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Ft	ull-load stop	6 Rotational- speed limitat.	3a Ft	uel delivery paracteristics	Starting t	fuel delivery 5	(4a) Idi	e stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
on re	0,7 bar specifications quest. operates in	790-800 *	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

WPP 001/4 KHD 40,5 g

1. Edition

En

PE 8 P 130 A 920/5 RS 489

RSUV 300-1000 POA 352

supersedescompany KHD

engine BA 16 M 816

Komb.-Nr. 0 401 878 130

1 - 6 - 4 - 5 - 8 - 3 - 2 - 7 0 -75 -90 -120-210-225-315-345° ± 0,5° (± 0,75°)
Values only apply to test nozzle-and-holder assembly
1 688 901 019 and fuel-injection test tubing 1 680 750 067
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 411

mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>-1</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	15,0+0,1	35,8-36,1	0,6(1,0)			
300	5,6-5,8	2,0-2,6	1,0(1,4)			
	<u> </u>					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

(1) Uppe	er rated speed	rev/min	Interme	ediate rate	d speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
loose	800	0,3-1,0	-		_	ca. 22	300	5,2	1000	15,0-15,1
	X =	2.0					300	5,6-5,8	280	16,2-16,8
ca. 67		1040-1050 1070-1100 0,3-1,7					325-38	=2,0	450	15,0-15,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting f	uel delivery 5	(4a) Idi	e stop
j	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
Not kn Adjust	own. according to t	1040-1050 <sup>3</sup> he engine re		<u>-</u>	-	-	-	<b>-</b>
Pumps tande	operates in							,se

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. 

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**Testoil-ISO** 

WPP 001/4 MB 14,6 K

5. Edition

PE 8 P 120 A 320 LS 3807

ROV 300-1150 PA 545

supersedes 4,85

1-8-7-2-6-3-5-4 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

company: Daimler-Benz

OM 422 A

Values only apply to test nozzle-and-holder assembly 243 kW (330 PS) 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 401 848 732

Note VDT-I-420/117!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres	troke (	3.95-4.15)	mm (from BDC)			
Rotational speed	Control rod trave!	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strckes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	40 7.0 4	15,8-16,0	0,5(0,9)	-		
1150	10,7+0,1	15,6-10,0	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
600					1	
900	-	C, Sp. 1 - 5	0,7(1,2)			
500			İ			

Adjust the fuel delivery from each outlet according to the values in [

### B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Stiding s	leeve travel
Degree of deflection	rev/min Control	Control rod (a)	Degree of deflection		Control rod travel	Degree of deflection of control		Control rod travel		0
of control lever	rod travel mm	mm rev/min (2a)	of control lever	rev/min	mm 4	lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1190	15,2-17,8	-		-	ca. 17	100	min.6,7	300	
ca. 54	9,7	1190-1200	-				300	5,0-5,2	800 1200	6,0-6,2 8,1-8,3
	4,0 1350	1235-1265 0-1,0					335-4	05 = 2,0	1260	
						<b>3a</b>				

Torque control travel a = 0,70 mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-red Test oil ten rev/min		Rotational-speed (2b) limitation intermediate speed rev/min	high idle s	very characteristics 5a speed 5b cm³/1000 strokes	idle switchir	<u> </u>	travel	Control 5  Control rod travel mm
LDA 1150 LDA 600	0,7 bar 157,5-159,5 (154,5-162,5) 0,7 bar 167,0-173,0 (164,0-176,0)	1190-1200*	LDA 900 LDA 500	0,7 bar 165,0-169,0 (162,0-172,0) 0 bar 139,0-141,0 (136,0-144,0)		140,0-160,0 (136,0-164,0)	1150 600 900	10,7+0 11,4+0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

 $\odot$ 

## B. Governor Settings (Old version - without auxiliary max-speed governor spring)

Upper rated s	peed			Intermediate	rated spe	ed	Lower rate	speed			Slidina sl	eeve travel
	revimin Control rod travet mm	mm		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm	3	rev/min	mm 11
<u> </u>	2	3		4	5	6	+	8	19	-	10	
max.	1190	15,2-1	7,8	-	-	-	ca. 17	100	mın. 6,	,7	300	1,6-1,8
ca. 54	9,7 4,0 1350	1190-12 1235-12 0-1	26						5,0-5,2 -405=2,0	)	800 1200 1260	6,0-6,2 8,1-8,3 9,9
					_		(3a)					

Torque control travel a = U,7U mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load o Control-ro Test oil te		Rotational-speed (2b) limitation intermediate speed	characte high idle	ristics	Starting Idle switchir	fuel delivery 6	Torque- travel	Control ro
rev/min 1	cm³/1000 strokes 2	rev/min (4a)	rev/min 4	cm <sup>3</sup> /1000 strakes 5	.rev/min 6	cm <sup>1</sup> /1000 strokes 7	rev/min 8	travel mm 9
LUA 1150	0,7 bar 157,5-159,5 (154,5-162,5)	1190-1200*	LDA 900	0,7 bar 165,0-169,0 (162,0-172,0		140,0-160,0 136,0-164,0)	1150 600 900	11,4+0
LUA 600	U,7 bar (167,0-173,U) (164,0-176,0)		LDA 500	0 bar 139,0-141,0 (136,0-144,0				

Checking values in brackets

1.mm less control rod travel than col. 2

# Testoil-ISO 4113

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE8PLS 38U7 + RUVPA 545	0	U,40 0,47	10,3-10,4 10,4-10,5 10,9-11,1

Fn

WPP 001/4 MB 14.6 k 1

3. Edition

PE 8 P 120 A 320 LS 3807

ROV 300-1150 PA 545-1

supersedes 4.85

1-8-7-2-6-3-5-4- je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

<sub>company:</sub> Daimler-Benz OM 422 LA

276 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

Komb.-Nr. 0 401 848 754

Note VDT-I-420/117!

750

500

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres	stroke (	(3,95-4,15)	mm (from BDC)	Cyl.	8	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	18,2-18,4	0,5(0,9)			·
300	4,8-5,0	1,2-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

C, Sp. 4 u.5

#### B. Governor Settings (New version - with auxiliary max-speed governor spring)

(1,2)

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed	•	Sliding sleeve travel	
deflection	rev/min Control rod travel	Control rod (1stravel mm	Degrae of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		
	mm	rev/min (2		rev/min	1.	lever	rev/min	mm (3)	rev/min 10	mm 11
1	2	3	1	5	6	/	8	19	10	<del>  ''</del>
max.	1190	15,2-17,	8 -	-	-	ca. 17		min.6,5	300	1,6-1,8
			4				300	4,8-5,0	800	6,0-6,2
ca. 55	11,0			l		İ	330-	400=2,0		8,6-8,8
	4,0	1235-126	5	I		ļ	330-	+00-2,0	1270	10,0
•	1400	0-1,0		1		l .				
<u> </u>			1		I I		1		I	
			1		1	(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle s	very characteristics (5a) speed (5b)	Starting Idle switchir	$\mathbf{O}$	Torque- travel	Control roc	
rev/min	cm³/1000 strokes	rev/min 48	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1150	0,7 bar 182,0-184,0 (179,0-187,0)		LDA 750	0,7 bar 195,0-198, (192,0-201,		140,0-160,0 (136,0-164,0			
			LDA 500	0 bar 141,0-143, (138,0-146,					

Checking values in brackets

1 mm less control rod travel than col. 2

# B. Governor Settings (Old version - without auxiliary max-speed governor spring) -2-

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1200	15,2-1	7,8	•	-	-	ca. 11	100	min. 6,5	j .	1,6-1,8
ca. 65	11,0 4,0 1400	1190~1 1235-1 0-1	265				320-46U	300	4,8- 5,0		4,6-5,0 8,4-8,7 9,9
							(3a)				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	character high idle s	ristics	Starting Idle switchin	fuel delivery 6	Torque-	Control cod
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 4a)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	.rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1150	0,7 bar 182,0-184,0 (179,0-187,0)	1190-1200*	LDA 750	0,7 bar 195,0-198,0 (192,0-201,0	,	140,0-160,0 (136,0-164,0		-
:			LDA 500	U bar 141,0-143,0 (138,0-146,0				

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

# Testoil-ISO 4113

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm
PE 8 PLS 3807 +RQVPA 545-1	0	U,40 0,55	10,5-10,7 11,1-11,4 12,2-12,6

En

Testoil-ISO 4113

WPP 001/4 MB 18,3 d 6. Edition

PE 10 P 110 A 320 LS 3818

RQV 300-1150 PA 486-2

supersedes 1.85

1-8-7-6-3-5-2-10-9-4

Daimler-Benz company:

0-27-72-99-144-171-216-243-288-315°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°)

OM 423

Komb.-Nr. 0 401 849 706

261 kW (355 PS)

Note VDT-I-420/117!

Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### Fuel Injection Pump Settings

A. i dei injecti	ou Lamb cerr	ııı <b>A</b> a
	4,0-4,1	
Port closing at prestroke	/2 OF A 15\	mm (from BDC)

Cy1.10; RW = 9.0 - 12.0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4-12,6	0,4 (0,8)			
300	8,5-8,7	1,4-2,2	0,4 (0,7)			
600		C, Sp. 4 + 5	0.6 (0.9)	Ì	İ	
900	<del>-</del>	, sp. ,				

Adjust the fuel delivery from each outlet according to the values in

## B. Governor Settings (New version - with auxiliary max-speed governor spring)

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed	•	Sliding	Sliding sleeve travel	
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Centrol rod travel		1	
<u>[</u> 1	2	3	4	5	6	7	8	9	10	11	
max.	1190	15,2-17,8	•	· -	-			min.10,2 8,5-8,7		1,6-1,8 5,8-6,2	
ca. 55	11,1 4,0 1400	1190-1200 1235-1265 0 - 1,0					430-49			8,2-8,4 10,0	
and the state and state an						39					

Torque control travel a = 0,5

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test cil ten		Rotational-speed 2b timitation intermediate speed	Fuel delichigh idle s	very characteristics (5a)	Idle	fuel delivery 6	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1150	124,0-126,0 (121,5-128,5		600	110,0-114,0 107,0-117,0)	100	140,0-160,0 (136,0-164,0	600	12,1+0, 12,5+0, 12,4+0,
			900	118,0-123,0 115,0-126,0)				
I						,		

Checking values in brackets

\* 1-mm less control rod travel than col. 2

2.86

KH. Kundendienst. Kfz-Ausrüstung. h GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. lique Federale d'Allemagne par Robert Bosch GmbH.

<b>B. Governor Settings</b>	(Old version - without	auxiliary max-speed	governor spring)
			l l

	Upper rated speed  Degree of			1 1 1			speed	Control rod	Sliding sleeve travel	
Degree of deflection of control lever	Control rod travel mm	travel (la	Degree of deflection of control lever	rev/min 5	travel	Degree of deflection of contro! lever	rev/min 8	travel	rev/min 10	mm 11
max.	1200	15,2-17,8 1190-1200	-	-	-	ca. 19	100 300	min.10,2 8,5-8,7	550	1,0-1,2 3,4-3,7
	4,0 1400	1240-1270 0-1,0			•	330-470			850 1150	4,9-5,3 7,6
						(3a)				

Torque control travel a = 0,5 mi

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b timitation intermediate speed	character high idle s	ristics	Idle	fuel delivery 6	Torque- travel	Control 5 Control rod
rev/min 1	cm³/1000 strokes	rev/min (4a)	rev/min 4	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	mm 9
1150	124,0-126,0 (121,5-128,5)		600 900	110,0-114,0 (107,0-117,0) 118,0-123,0 (115,0-126,0)	1	140,0-160,0 (136,0-164,0		12,5+0

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measur	ement	Control rod travel	diminution difference
	Gauge pressure =	bar Gauge	pressure = bar	mm	
	·				
				·	

EnL

WPP 001/4 SCA 9,0 a

2. Edition

PE 6 P 120 A 320 RS 7102 Komb.-Nr. 0 402 746 800

RQV 200-1100 PA 712-1

supersedes 3.85

company: Scania

engine: DS 9 01

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 5,0-5,1

Port closing at pres	stroke	(4.95-5.15)	mm (from BDC)	mm (from BDC)							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
700	12,0+0,1	16,3-16,5	0,6(0,9)			3,3 <sup>±</sup> 0,1					
225	4,8-5,0	1,5-1,9	0,3(0,6)			(3,0-3,5)					
					Ì						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod (la travel)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Shumgs	1
lever	mm 2	rev/min (2a)	lever	rev/min 5	mm (4)	lever 7	rev/min 8	mm (3)	rev/min 10	mm 11
max.	1140	15,2-17,8		<del></del>		ca. 10	<del></del>	min 6 2	225	0,9-1,0
	1140	13,2-17,0	_	` -	-	ca. 10			350	2,3-3,2
ca. 63	11,0	1140-1150					E .	60=2,0	420	3,7-4,5
	4,0	1280-1310			<b>}</b>	ŀ		*	550	5,0-5,2
ì	1450	0-1,0							1140	8,8
						<b>3a</b>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	very characteristics 5a speed 5b	Starting Idle switchli		Torque- travel	control 5	
rev/min	cm³/1000 strokes	rev/min 4e	nim\ver	cm <sup>3</sup> /1000 strokes	rev/min	rev/min cm³/1000 strokes		travel mm	
1	2	3	4	5	6	7	8	9	
LDA 700	0,9 bar 163,0-165,0 (160,0-168,0		LDA 1100 LDA 500	0,9 bar 164,0-172,0 (162,0-174,0) 0 bar 141,0-145,0 (139,0-147,0)		240,0-290,0 =20,0-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2



## D. Adjustment Test for Manifold Pressure Compensator

SCA 9,0 a

-2-

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
PE 6 PRS 7102 +RQVPA 712-1	0,90	0 0,42 0,38	12,0-12,1 11,3-11,4 11,7-11,8 11,5-11,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

H13

مري. مسدگ

Testoi-150

and Governors

PE 6 P 120 A 720 RS 7118 RQV 250-1100 PA 785

Komb.-Nr. 0 402 646 831

supersedes-

company: Steyr

WD 615.68

228 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC) RW=9.0-12.0 mm Port closing at prestroke Difference Control rod travel Fuel delivery Spring pre-tensioning Rotational speed Control rod **Fuel delivery** (torque-control valve) travel cm<sup>3</sup>/ cm<sup>3</sup>/100 strokes 100 strokes cm<sup>3</sup>/100 strokes mm mm rev/min

18,1-18,3  $3,3 \pm 0,1$ 1100 0,5(0,9)12,7+0,(3,0-3,5)0,8(1,2)250 5,7-5,9 1,5-2,1

\*\* Due to smoothing of the sealing edge, the initial spring tension with a new delivery-valve holder must be adjusted to 2,9-3,1 mm.

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated :	speed			Intermediate	rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
Degree of deflection	rev/min Control	Control rod travel	<b>(18)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel	mm rev/min	<b>(28)</b>	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	_	4	5	6	7	8	9	10	11
max.	1150	15,2-1	7,8	-	•	-	ca. 14	100	min.7,2	200	0,7-0,9
ca. 48	11,7 4,0 1350	1225-1	255			·		250 275-	5,7-5,9 375	500 800 1100	3,1-3,3 5,5-5,7 8,0
							<b>3</b> a		···		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 2b fimitation intermediate speed	Fuel deliv	very characteristics 5a poeed 5b	Starting idle switchir	•	Torque- travei	Control rod
rev/min	cm³/1000 strokes .	revimin 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1100	1,2 bar 181,0-183,0 (178,0-186,0)	1140-1150*	LDA 700	1,2 bar 190,0-196,0 (187,0-199,0		225,0-265,0 (221,0-269,0)	-	-
			LDA 700	0 bar 143,0-145,0 (140,0-148,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

### D. Adjustment Test for Manifold Pressure Compensator

STE 9,7 d 1

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

300			
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) . ~
PE6PRS 7118 +RQVPA785	1,20	0 0,57 0,36	12,7-12,8 10,3-10,4 12,1-12,2 10,8-11,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 VOL 3,6 g 1

4. Edition

Overflow temperature 45° C

supersedes Volvo

company: TAMD 40 B - 121 kW

VE 6/11 F 1800 L 19-7

0 460 416 025

All test specifications are valid only for Bosch Fuel-injection Pump Test Benchez and Testers

Pre-stroke setting 0,2 0,02 0,04

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,6 - 3,0	mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8	bar (kgf/cm²)		
1.3 Full-load delivery with	_		cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	1500	80,5-81,5	cm³/1000 stroķes		3,0 (3,5)
charge-air pressure  1.4 Idle regulation	400	8,5-12,5	cm <sup>3</sup> /1000 strokes		3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5	cm <sup>3</sup> /1000 strokes	:	
1.6 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (	0,4-1,8)	1500 (2,1-3,5)		770 (3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	2	400 ,3-2,9	7,1-	770 7,7	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	41-8	600 3 (26-98)		800 (40–153)	
2.3 Fuel deliveries					3. Dimen	Sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2130 2050 1900 1770 1500 600	max. 2,5 43,5-49,5 75,5-77,5 70,0-74,0	(6,5-15,5) (42,0-51,0) (73,9-79,1 (78,4-83,6) (68,6-75,4)		K KF MS SVS	5,9-6,1 0,9-1,1 max. 2,3
switch-off					A XK	18,7-20,7 10,9-14,2
End stop	500 400 120 220	max. 2,5 min. 60 max. 60	(6,0-15,0)	·	Observations	_1
2.4 Solenoid	cut-in volta	min.	10 V			

**BOSCH** 

H16

WPP 001/4 VOL 3,6 g 2

1. Edition

Festoil-ISO 4113

Overflow temperature 45° C VE 6/11 F 1800 L 19-10 0 460 416 045

supersedes company:VO1vO engine: TAMD 40 B -121 kW

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

 $_{mm} \stackrel{+}{-} 0,02 (0,04)$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,6 - 3,0	mm		
1.2 Supply-pump pressure	1500	6,2 - 6,8	bar (kgf/cm²)		
1.3 Full-load delivery with	<b>-</b> '		cm <sup>3</sup> /1000 strokes	ĺ	
charge-air pressure Full-load delivery without	1500	80,5-81,5	cm³/1000 stroķes		3,0 (3,5)
charge-air pressure 1.4 Idle regulation	400	8,5-12,5	cm <sup>3</sup> /1000 strokes	}	3,0 (3,5)
1.5 Full-speed regulation	2050	7,5-14,5	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	<u></u>				

2. Test Spe	cifications	checking values in t	orackets ( )			
2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (	1000 0,7-1,5 (0,4-1,8) (2		1770 3,6-4,4 (3,3-4,7	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9			770 -7,7	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 41-83 (26	-98)		800 (40-153)	
2.3 Fuel deliveries	- <del>L</del>				3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2130 2050 1900 1770 1500 600	75,5-77,5	(6,5-15,5) (42,0-51,0) (73,9-79,1) (78,4-83,6) (68,6-75,4)		K KF MS SVS	5,9-6,1 0,9-1,1 max. 2,3
switch-off					A XK	18,7-20,7
End stop	500 400 120 220	max, 2,5 min. 60 max. 60	(6,0-15,0)		Observations 24 V Pu	ılling
2.4 Solenoid	cut-in voltag	) <del>e</del>				

2. Test Specifications checking values in brackets (

WPP 001/4 Vol 3,6 p 1

1. Edition

Testoil-ISO 4113

VE 6/11 F 1625 L 19-11

Overflow temperature 45° C

supersedes company:

Volvo-Penta

engine:

TAMD 40 B - 105 kW

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

Pre-stroke setting

0 460 416 052

0,2

± 0,02(0,04)

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,6-3,0	mm		
1.2 Supply-pump pressure	1500	6,2-6,8	bar (kgf/cm²)	·	
1.3 Full-load delivery with	-	-	cm³/1000 strokes		
charge-air pressure Full-load delivery without	1500	72,5-73,5	cm³/1000 stroķes		3,5
charge-air pressure 1.4 (dle regulation	400	8,5-12,5	cm³/1000 strokes		3,5
1.5 Full-speed regulation	1900	15,0-23,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 60,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-				

2.1 Timing device	n = rev/min mm	1000 0,7-1,5(0,4-1,8)	1500 (2,1-3,5)	3,0-3,	625 8(2,7-4,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,3-2,9			625 -7,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		55-138	625 (40-153)
2.3 Fuel deliveries  Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press.	3. Dimen	sions for assembly and adjustment mm
End stop	2000 1900 1800 1625 1500 600	max. 10,0 (14,5-23,5) 32,5-38,5 (31,0-40,0) 66,0-69,0 (64,8-70,2) 72,5-73,5 (70,3-75,7) 58,0-62,0 (56,7-63,4)	Dai (Rg/rain')	K KF MS SVS	5,9-6,1 0,9-1,1 max.4,9
switch-off				A B	
idle stop	580 500 400	0 max. 2,0 (6,0-15,0)		Observations pushing e	lectronagnet
End stop	110 210	min. 60,0 max. 50,0			

2.4 Solenoid

cut-in voltage

44

WPP 001/4 Sof 2,5 g

2. Edition

Testoil-ISO 4113

VE 4/9 F 2100 R 22-5

Overflow temperature 45° C

supersedes

company:

4.82 Sofim

engine:

8140.61.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0 460 494 109

0,3

2. Test Specifications checking values in brackets (

mm ± 0,02 (0,04) mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with	2000	37,5-38,5	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge-air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	370	8,0-12,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	2350	19,0-25,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 55,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	1800			·	

2.1 Timing device	n = rev/min mm	400 1,8-2,8(1,6-3,0)	1800 (5,9-8,3)	2100 8,4-9,2(8,1-9,5)		
2.2 Supply pump	n = rev/min 400 ° bar (kgf/cm²) 2,9-3,5			2100 6,9-7,5		
Overflow delivery	n = rev/min cm³/10 s	500 55-111(40-126)		2100 55-111(40-126)		
2.3 Fuel deliveries Speed control lever	[Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press.	3. Dimensions tor assembly and adjustment Designation		
End stop	2500 2350 2100 2000 1100 600	max.4,5 (18,0-26,0) 36,7-39,3 (35,7-40,3) (35,7-40,3) 43,5-46,5 (42,7-47,3) 35,3-35,8 (33,8-39,8)	bar (kgf/cm²)	K KF 5,4-5,6 MS 1,7-1,9 svs max.2,7		
switch-off	2100	0		A B		
End stop	370 420 500 400 480	(6,0-14,0) min. 1,5 max. 3,0 min. 37 32,0-38,0		Observations		
2.4 Solenoid	cut-in volta	min 10 V rated voltage 12 V.				

WPP 001/4 VWW 2,3b1

3. Edition

Testoil-ISO 4113

VE 6/10 F 2400 L 32 0 460 406 003

Overflow temperature 45° C

supersedes3.85 company: VW engine: 087/10

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes		max. 2,5
charge-air pressure Full-load delivery without	-	-	cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strakes		
1.6 Start	2700	6,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Spe	cifications	checking values in t	orackets ( )			
2.1 Timing device	n = rev/min	1000	15	00	2400	
	mm	0,8-1,6 (0	,5-1,9) (2,8	3-3,2)	5,7-6,5	(5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,8-3,4		***	2400 7,5-8,	
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-	-153)		2400 55-138	(40-153)
2.3 Fuel deliveries					3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2700 2600 2400 1500 750	22,0-24,0	(5,0-13,0) (14,5-22,5) (20,8-25,2) (26,8-31,2) (24,5-30,5)		K KF MS SVS	3,2-3,4 6,4-6,6 1,4-1,6 max. 3,0
switch-off	400	0	· <u> </u>		A XK	18,5-20,5
End stop	375 600 400 500	1,0-7,0 min. 20,0 max. 25,0	( 4,0-12,0)		Observations	3,2-12,3
2.4 Solenoid	cut-in volta	pe min. 1	•			

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3 b 5. Edition

VE 6/10 F 2400 L 32-1 (P)

0 460 406 009;

010

supersedes 3.85 company: VW

087/10 Autom. engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with	1500	28,5-29,5	cm³/1000 strokes		max. 2,5
charge-air pressure Full-load delivery without	-	-	cm³/1000 stroķes	:	
charge-air pressure  1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2700	6,0-12,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					
I	Ī	1		1	1

2.1 Timing device	n = rev/min	1000	1500	2400	
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)	5,7-6,5 (5,4-6,8	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,8-3,4		2400 7,5-8,1	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		2400 55-138(40	
2.3 Fuel deliveries		<u></u>		3. Dimens	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kg1/cm²)	Designation	and adjustment mm
End stop	2700 2600 2400 1500 750	(5,0-13,0) 15,0-22,0 (14,5-22,5) 22,0-24,0 (20,8-25,2) (26,8-31,2) 26,0-29,0 (24,5-30,5)		K KF MS SVS	3,2-3,4 6,4-6,6 1,4-1,6 max. 3,0
switch-off mech. electr.	2400 400	0		A XK	18,5-20,5 9,2-12,9
Idle stop	375 600	( 4,0-12,0) max. 4,0		Observations Stop check	•
End stop	400 500	min. 20 max. 25		n = 2400 m	3 <b>n/ 1</b> .
2.4 Solenoid	cut-in volta	min 10 V rated voltage 12 V.			

Testoil-ISO 4113

Test Specifications
Distributor-type
Fuel-injection Pumps

40

WPP 001/4 VWW 2,4 k

3. Edition

VE 6/10 F 2400 L 32-2 Overflow temperature 45° C

0 460 406 037

supersedes 3.85 company: VWW engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes		max. 2,5
Full-load delivery>without charge-air pressure	1500	28,5-29,5	cm <sup>3</sup> /1000 stroķes		
1.4 Idle regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min.35	cm <sup>3</sup> /1000 strokes	!	
1.7 Load-dependent port-closing					

2.1 Timing device	n = rev/min	1000	1500	2400		
	mm	0,8-1,6 (0,5-1,9)	(2,3-3,7)		5 (5,4-6,8)	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,8-3,4		240 7,5-8	-	
Overflow delivery	n = rev/min 600 cm <sup>3</sup> /10 s 55-138 (40-153)				(40-153)	
2.3 Fuel deliveries				3. Dimen	for assembly	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm	
End stop	2800 2700	max. 4,0 (5,0-13,0)		K	3,2-3,4	
·	2400 1500	22,0-24,0 (20,7-25,3) (26,7-31,3)		KF MS	6,4-6,6 1,5-1,7	
	750	26,0-29,0 (24,5-30,5)		svs	3,6	
switch-off	70-400	0		A B		
dle stop	375 600	(4,0-12,0) max. 4,0		Observations		
End stop	400 500	min. 20,0 max. 25,0				
2.4 Solenoid	cut-in voltage	min. 10 V				

BOSCH

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WPP 001/4 VWW 2,4 k 2

3. Edition

Testoil-ISO 4113

VE 6/10 F 2400 L 32-3

Overflow temperature 45° C

0 460 406 038

supersedes VW company: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

m

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-		cm <sup>3</sup> /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure 1.4 Idle regulation	1500 375	28,5-29,5 6,0-10,0	cm <sup>3</sup> /1000 strokes		max. 2,0
1.5 Full-speed regulation	2700	6,0-12,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min.35	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device n = rev/min mm		1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm³/10 s	600 55-138 (40-153)		2400 55-138 (40-153)
		_ <del></del>	<del></del>	0.0

2.3 Fuel deliveries	.3 Fuel deliveries					
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air bar (kgf/cn	press. [	3. Dimens	and adjustment mm
End stop	2800 2700 2400 1500 750	22,0-24,0 (20	,7-31,5)		K KF MS SVS	3,2-3,4 6,4-6,6 1,5-1,7 3,6
switch-off electr. mech.	70-490 2400	0			A B	
End stop	600 375 400 500	max. 4,0 (4, min. 20,0 max. 25,0	0-12,0)		Observations	
2.4 Solenoid	cut-in voltag	min 10 rated voltage				

H23

WPP 001/4 FIA 1,3 A 2.Edition

**Festoil-ISO 4113** 

VE 4/8 F 2500 R 61

Pre-stroke setting

Overflow temperature 45° C

supersedes company FIAT/FIASA

0 460 484 006

engine: X 8/29

All test specifications are valid only for Sosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

1. Settings	Rot. speed rev/min	Settings	Settings		Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1600	5,6-6,0	mm		
1.2 Supply-pump pressure	1600	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with	1600	20,0-21,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
charge air pressure Full-load delivery without			cm³/1000 stroķes		
charge-air pressure 1.4 Idle regulation	350	8,0-14,0	cm <sup>3</sup> /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 29,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	2650	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1600				

2. Test Spe	cifications	checking values in I	prackets ( )			
2.1 Timing device	n = rev/min mm	1000 2,4-3,2(2,	1600 1-3,5)(5,1-6,	2000 5)7,8 <b>-</b> 8,4(7	0 ,4-8,8)9,4-	2400 10,2(9,1-10,5)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,1-1	,7			2500 7,2-7,8
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40	-125)		55-	2500 110(40-125)
2.3 Fuel deliveries		1			3. Dimen	sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2800-2950 2750 2650 2500 2000 1600 600	1	(1,0-9,0) (8,0-16,0) (18,2-22,8) (18,7-23,3) (18,2-22,8) (14,5-20,5)		K KF MS SVS * FH	3,2-3,4 5,7-5,9 1,4-1,5 max.3,0 1,8-2,4
switch-off	2500	0			AXK B XL	20,2-22,2
Idle stop	550 450 350	0 max.4,0	(7,0-15,0)			ing stroke start accel.)
End stop	400 500	min.24,0 max.26,0				
2.4 Solenoid	cut-in voltage	8				

WPP 001/4 IHC 5,8 t 1

1. Edition

VE 6-12 F 1350 R 64-1

Overflow temperature 45° C

supersedes IHC

D 358/PC 11

0 460 426 089

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

Testoil-ISO 4113

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	1 .		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1150	5,2-5,6	mm		
1.2 Supply-pump pressure	1150	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with	-	-	cm³/1000 strokes		
charge-air pressure Full-load delivery without	1150	84,0-85,0	cm³/1000 stroķes		3,5 (4,5)
charge-air pressure 1.4 Idle regulation	500	14,5-20,5	cm³/1000 strokes	·	3,5 (4,5)
1.5 Full-speed regulation	1430	44,0-50,0	cm³/1000 strokes		
1.6 Start	100	min. 100,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-	<b>-</b> ·			

2. Test Spec	1	·	<del></del>	4450		4000
2.1 Timing device	n = rev/min mm	600 1,6-2,4 (	1,3-2,7)	1150 (4,7-6,		1300 -6,1 (5,0-6,4
2.2 Supply pump	n = rev/min bar (kgf/cm²)	2	400 ,7-3,3		300 -6,6	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	55-1	500 38 (40-163)		350 8 (40-158)	
2.3 Fuel deliveries	- <del></del>	· <b>!</b>	- · · · · · · · · · · · · · · · · · · ·		3. Dimen	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1540 1480 1430 1300 1150 800 500	max. 2,0 9,0-17,0 80,0-83,0 77,0-81,0 65,0-70,0	(8,0-18,0) (42,0-52,0) (78,5-84,5) (81,5-87,5) (76,0-82,0) (63,7-71,3)		K KF MS SVS	3,2-3,4 5,7-5,9 1,0-1,2 max. 6,0
switch-off				·	A XK	20,2-22,2 15,8-19,8
Idie stop End stop	570 520 500 250 350	max. 1,0 min. 4,0 min. 100 max. 80	(12,5-22,5)		Observations	
2.4 Solenoid	cut-in voltag	rated wolt	10 V age 12 V	1		

4.86

WPP 001/4 BMW 2,4c

2. Edition

VE 6/10 F 2400 R 118-1

Overflow temperature 45° C

supersedes

7.84 BMW-USA Ford company:

0 460 406 041 Over OHK 1 688 901 022/130 bar Fuel injection test tubing 1 680 750 073

M 21 D 24 engine:

All test specifications are valid only for Bosch Fuel-Injection Pump Toot Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kg1/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery with	1500	39,5-40,5	cm³/1000 strokes	1,050	max. 3,0
charge-air pressure Full-load delivery without	500**	22,0-23,0	cm³/1000 stroķes	0	max. 3,0
charge-air pressure 1.4 Idle regulation	400**	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Spec	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min mm	400 3,8-4,6(3,5-4,9)	1500 (6,0-7,4)	1500** 0	2000 8,2-9,0(7,9-9,3
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 4,4-5,0		2300 7,2-7,	
Overflow delivery	n = rev/min cm³/10 s	500 42-83(27-98)		2400 55-138	(40-153)
2.3 Fuel deliveries Speed control lever	Rot.speed	Fual delivery	Charge-air	press. Designation	ensions for assembly and adjustment mm
End stop	2700 2600 2400 1500 750* 500**	7,0-13,0 (6,0-14 (16,0-2 39,5-41,5 (38,2-4 (37,7-4 33,0-34,0 (30,5-3 (19,5-2	14,0     1,05       12,8     1,05       12,3     1,05       16,5     0,5	0 K 0 KF	3,2-3,4 6,3-6,6 1,4-1,6 3,0
switch-off				A B	
Idlestop Exhaust gas to culation drive Start Inspect point Limit Stop	/er 850***	(4,0-12 max. 3,0 16,0-18,0(15,0-1 27,0-37,0(20,0-2 28,0-38,0(25,0-2 19,2-23,8(16,5-2	19,0) 12,0) 11,0)	** Supp	stroke 17,5 mm ly 12 volts to solenoid valve stment point AGR
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12	٧	1 1 .	page 2

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.
(Do not apply voltage to solenoid-operated valve.

WPP 001/4 BMW 2,4 c 1 1. Edition

4113 **Testoil-ISO** 

VE 6/10 F 2400 R 118-2

Overflow temperature 45° C

0 460 406 050 DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

supersedes

company: BMW-USA Ford

engine: M 21 D 24

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	6,5-6,9	mm	1,050	
1.2 Supply-pump pressure	1500	5,9-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery with	1500	39,0-40,0	cm <sup>3</sup> /1000 strokes	1,050	max. 3,0
charge-air pressure Full-load delivery without	500**	21,5-22,5	cm³/1000 stroķes	0	max. 3,0
charge-air pressure 1.4 Idle regulation	400**	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm <sup>3</sup> /1000 strokes	1,050	max. 5,0
1.6 Start	250**	35,0-37,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing	-				

2. Test Spec	T	checking values in brackets (	)				
2.1 Timing device	n = rev/min	400		500	1500**		2000
	mm	3,8-4,6(3,5-4,9)	(6,	0-7,4)	0	8,2	-9,0(7,9-9,3)
2.2 Supply pump	n = rev/min	500			2300	)	
	bar (kgf/cm²)	4,4-5,0			7,2-7	,8	
Overflow delivery	n = rev/min	500			2400	)	
	cm <sup>3</sup> /10 s	42-83(27-98)				3(40-15	3)
2.3 Fuel deliveries					3. [	Dimen	sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Design	nation	and adjustment mm
End stop	2700 2600	7,0-13,0 (6,0-14, (16,0-24		1,050 1,050		К	3,2-3,4
	2400	39,5-41,5 (38,2-42	(8,	1,050		KF	6,3-6,6
	1500	(37,2-41	(8,	1,050	1 1	· ···	1,4-1,6
	750*	32,5-33,5 (30,0-36		0,5	]	MS	
	500**	(19,0-25	5,0)	0		svs	3,0
switch-off						A	
• W.C		,				В	
idle stop	400**	(4,0-12	,0)		1	vations	roke 7,5 mm
Exhaust gas ı	reci- 450**	max. 3,0	۱۵ ۵۱		)		
culation driv		16,0-18,0 (15,0-1	19,U) 19 N		""	the col	12 volts to enoid valve
Start Inspect		27,0-37,0 (20,0-4 28,0-38,0 (25,0-4	11.0)		***	Adiustm	ent point
point	480**	19,2-23,8 (16,5-2	26.5)			for AGR	ent point
Limit_stop		1.5,2 25,5 (.0,6)		<u> </u>		back	-
2.4 Solenoid	cut in voltage	min. 10 V				See pag	e 2
		rated voltage 12 V		····	J L		

BOSCH

Pull control lever in full-load direction until gauge fits over drive hub and connection piece of housing cover. Measure fuel delivery.

(Do not apply voltage to solenoid-operated valve.

WPP 001/4 MAN 5,6 h 2

2. Edition

Testoil-ISO 4113

VE 6/12 F 1400 R 120-4 Overflow temperature 45° C 0 460 426 036

supersedes MAN

DO 226 MC

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

 $_{mm} \pm 0.02(0.04)$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	3,5-3,9	mm	0,8	
1.2 Supply-pump pressure	800	5,1-5,7	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	1000	112,0-113,0	cm³/1000 strokes	0,8	4,0 (4,5)
charge-air pressure Full-load delivery without	630	85,5-86,5	cm³/1000 strokes	0	
charge-air pressure  1.4 Idle regulation	300	10,0-16,0	cm³/1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1440	92,0-100,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 70,0	cm³/1009 strokes	0	
1.7 Load-dependent port-closing	-				

2.1 Timing device	n = rev/min	500		800		1100
2.1 ,,,,,,,	mm	1	0,9-2,3)		4.9-	1100 5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min					2,7 (4,0 2,0)
****	bar (kgl/cm²)	500 3,8-4,4		6,1-6	100 5.7	
Overflow delivery	n = rev/min	500	152)		400	
		55-138 (40	J-103)	55-138	3 (40–153) <b>3. Dime</b> r	eione
2.3 Fuel deliveries			•		J. Dilliel	for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1650 1550	max. 1,0 26,0-34,0	(25.0-35.0	0,8	к	_
	1440	i	(91,0-101,	0) 0,8	KF	5,7 - 6,0
	1400	108,0-112,0			MS	1.0 - 1.2
	1000 800	110,0-114,0	(109,5-115) 115,0 (109)	,5) 0,8 ,0) 0,8	svs	1,0 - 1,2
	630	112,0-116,0	)(110.3-117	,0) ,7) 0,8		j
	* 630 630	106,5-107,5	(103,3-110 (82,3-89,	,7) 0,4		
switch-off			, 02,0 00,	7	A	25,0-27,0
					В	13,5-16,8
Idle stop	300		(8,0-18,0)		Observations	
	350	max. 5,0	(0,0-10,0)		LDA-str	oke:4,5 mm
	400	max. 1,0				
End stop	230 400	min. 100 max. 100				
		III   100				
2.4 Solenoid	cut in volta	ge				

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WPP 001/4 BMW 2,4a

2. Edition

0 4113

VE 6/10 F 2400 R 121

Overflow temperature 45° C

supersede 10.83 company: BMW

0 460 406 022 DHK 1 688 901 022

Pre-stroke setting

engine: M 21 D 24-Europa

Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,1-4,5	mm	1,050	
1.2 Supply-pump pressure	1500	6,1-6,5	bar (kgt/cm²)	1,050	
1.3 Full-load delivery with	1500	39,5-40,5	cm³/1000 strokes	1,050	max. 3,0
charge-air pressure Full-load delivery without	500	28,0-29,0	cm³/1000 strokes	0	max. 3,0
charge-air pressure  1.4 Idle regulation	400	6,0-10,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2600	17,0-23,0	cm³/1000 strokes	1,050	max. 5,0
1.6 Start	250	35,0-37,0	cm³/1000 strokes	0	
1.7 t cad-dependent port-closing:	1_				ļ

Z. 1691 Sher	ilications	checking value	s in brackets ( )					
2.1 Timing device	n = rev/min	500*	750	1000*	1	500	2	300
DA=1,050 bar	mm		1,3-2,1(1,0-2,	4)	(3,6)	-5,0)	7,4-	8,2 (7,1-8,5
2.2 Supply pump LDA=1,050 bar	n = rev/min bar (kgf/cm²)	500 3,2-3,6					2300 -8,5	
Overflow delivery	n = rev/min cm³/10 s	500 41-83(26	-98)				2300 38(40	-153)
2.3 Fuel deliveries	<del></del>	*·				3. Din		ions
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strok	es	Charge-air pres	S.	Designatio	n	for assembly and adjustment mm
End stop	l 1500	9,5-41,5	(6,0-14,0) (16,0-24,0) (38,2-42,8) (37,7-42,3) (31,5-37,5) (25,5-31,5)	1,050 1,050 1,050 1,050 0,50		K KF MS SVS		3,2-3,4 6,3-6,6 1,5-1,7 4,0
switch-off						A ) B )	(K (L	20,2-22,2 9,5-12,8
Idle stop  End stop	400 475 100 400 480	32,0-42,0	(4,0-12,0) 0 (20,0-42,0) 0 (29,0-45,0) 8 (22,5-32,5)	u.	*	start a for ope See pag LDA-st	hydr. accel erati ge 2 <b>roke</b>	cold- erator on: 4,3 mm
2.4 Solenoid	cut in voltage		in 10 V Itage 12 V.			(46) t		

**BOSCH** 

\* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator. 500 1/min 1.9 - 2.9 (1.7-3.1) 1000 1/min 3.7 - 4.7 (3.5-4.9)

WPP 001/4 MAN 5,6p2

1. Edition

VE 6/12 F 1100 R 166 Testoil-ISO 4113 0 460 426 037

Overflow temperature 45° C

supersedes MAN

engine: DO 226 MTE 51

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

**Test Instructions and Test Equipment** 

Pre-stroke setting

mm = 0,02 (0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	700	3,3-3,7	mm		
1.2 Supply-pump pressure	700	4,3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with	-		cm³/1000 strokes		
charge-uir pressure Full-load delivery without	700	90,5-91,5	cm³/1000 strokes		4,0 (4,5)
charge air pressure 1.4 Idle regulation	300	13,0-19,0	cm³/1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1230	18,0-24,0	cm³/1000 strokes		
1.6 Start	100	min. 80	cm³/1000 strokes	:	
1.7 Load-dependent port-closing	700	-			

2. Test Spe	cifications	checking values in b	rackets ( )			
2.1 Timing device	n = rev/min	500 1,5-2,3 (	1,2-2,6)	700 (2,8-4	,2) 3,7	900 -4,5 (3,4-4,8
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 3,3-3,9			100 9-6,5	
Overflow delivery	n = rev/min cm³/10 s	500 55-138 (4	0-153)		100 (40-153)	
2.3 Fuel deliveries					3. Dimer	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kg1/cm²)	Designation	and adjustment mm
End stop	1280 1230 1170 1100 900 700 500	89,5-92,5	(16,0-26,0 (69,0-79,0) (88,0-94,0) (90,0-96,0) (88,0-94,0) (89,3-96,7)		K KF MS SVS	- 5,7-6,0 0,9-1,1
switch-off					A B	
idle stop	300 330 370	3,0-9,0 max. 1,0	(11,0-21,0) (1,0-11,0)		Observations	
End stop	350 450	min. 101,0 max. 101,0				
2.4 Solenoid	cut-in voltage	min.		<del></del>		

WPP 001/4 FIA 5,5p

1. Edition

VE 6/11 F 1100 R 181-2 Overflow temperature 45° C 0 460 416 050

**Eppersedus** company.Fiat

engine: 8065.05.297

DHK: 1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

re-stroke setting	_ n	1
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1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,9-3,3	mm		
1.2 Supply-pump pressure	800	6,1-6,7	bar (kgf/cm²)		
1.3 Full-load delivery with	-		cm <sup>3</sup> /1000 strokes		
charge-air pressure Full-load delivery without	800	64,8-65,2	cm³/1000 strokes		max. 3,5
charge-air pressure 1.4 Idle regulation	400	16,0-20,0	cm³/1000 strokes		max. 3,5
1.5 Full-speed regulation	1200	17,0-23,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 100	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	_				

2.1 Timing device	n = rev/min	600	800	n 44	100	
E. T. IIIIIII Y GOTICO	mm	1	3-1,7) (2,4-	-	100 1(5 0-6 4)	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 5,1-5,7		11	100 1-8,0	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 42-83(27-9	98)	55-1	1100 138(40-153)	
2.3 Fuel deliveries	_1	<u> </u>			3. Dimen	ISIONS
Speed control lever	Rol. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. lber (kgf/cm²)	Designation	and adjustment mm
End stop	1300 1240 1200 1150 1080 800 500	max. 2,5 1,5-8,5 38,5-45,5 59,5-62,5 59,0-62,0	(15,5-24,5) (37,5-46,5) (58,3-63,7) (61,6-68,4)		K KF MS SVS	3,2-3,4 5,2-5,5 1,5-1,7
switch-off					A B	
End stop	520 450 400 150 250	max. 2,5 3,0-9,0 min. 100,0 max. 60,0	(1,5-10,5) (13,5-22,5)		Observations 24 V Pul electrom	

cut-in voltage

2.4 Solenoid

WPP 001/4 FIA 5,5p1 1. Edition

VE 6/11 F 1075 R 181-3 Overflow temperature 45° C

0 460 416 051

DHK: 1 688 901 020

#upersedeFiat company: 8065.05.295

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	2,6-3,0	mm		
1.2 Supply-pump pressure	800	5,9-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with	-		cm³/1000 strokes		
charge-air pressure Full-load delivery without	800	66,0-67,0	cm³/1000 stroķes		max. 3,5
charge-air pressure 1.4 Idle regulation	450	17,0-21,0	cm <sup>3</sup> /1000 strokes	1	max. 3,5
1.5 Full-speed regulation	1180	22,0-28,0	cm³/1000 strokes		
1.6 Start	100	min. 110,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing					

2.1 Timing device	n ≈ rev/min	500	80	Λ	1000	
	mm		<u>-1,7) (2,1-</u>	-	· ·	
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 4,4-5,0			1000 6,9-7,5	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 42-83(2	7-98)	55-	1075 138(40-153)	
2.3 Fuel deliveries					3. Dimer	for assembly
Sp <del>ue</del> d control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	1260 1220 1180 1050 800 500	max. 2,5 5,0-12,0 57,0-60,0 70,5-73,5	(4,0-13,0) (20,5-29,5) (55,8-61,2) (63,1-69,9) (68,6-75,4)		K KF MS SVS	3,2-3,4 5,2-5,5 1,5-1,7 4,2
switch-off					A B	
End stop	450 475 500 150 250	1,5-7,5 max.2,5 min.110,0 max, 75,0	(14,5-23,5) ( 0- 9,0)		Observations  24 V Pul electrom	
2.4 Solenoid	cut in voltag	10				

WPP 001/4 REN 2,0n

1. Edition

VE 4/9 F 2200 R 183

Overflow temperature 45° C

supersedes

Renault

0 460 494 160 DHK 1 688 901 022

company: engine:

J 85-814

Fuel injection test tubing 1 680 750 073

Test Instructions and Test Equipment

Pre-stroke setting

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1400	4,0-4,4 mm	1,0	
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm²)	1,0	
1.3 Full-load delivery with	1400	49,0-50,0 cm <sup>3</sup> /1000 stroke	1,0	max. 2,0
charge-air pressure Full-load delivery without	600	22,5-23,5 cm <sup>3</sup> /1000 stroke	s 0	
charge-air pressure 1.4 Idle regulation	400	4,0-8,0 cm <sup>3</sup> /1000 stroke	s 0	max. 2,5
1.5 Full-speed regulation	2400	23,0-29,0 cm <sup>3</sup> /1000 stroke	1,0	
1.6 Start	100	min. 60,0 cm <sup>3</sup> /1000 stroke	s 0	
1.7 Load-dependent port-closing	-			

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device LDA=1,0 bar	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1400 (3,5-4,9)	2000 ) 6,2-7,0(5,9-7,3)	)
2.2 Supply pump LDA=1,0 bar	n = rev/min bar (kgl/cm²)	400 1,8-2,4		2000 6,7-7,3	
Overflow delivery	n ≖ rev/min cm³/10 s	500 55-138(40-153)		2200 55-138(40-153)	
2.3 Fuel deliveries  Speed contrel lever	Rot. speed	Fuel delivery	Charge-air press.	3. Dimensions for assembly and adjustment mm	nt
End stop	2700 2500 2400 2000 1400 1000 700* 600	max. 2,0 max. 17,5 (22,0-30, 45,5-47,5 (44,2-48, (47,2-51, 46,0-49,0 (45,2-49, 34,0-35,0 (31,5-37, (20,0-26,	8) 1,0 8) 1,0 8) 1,0 5) 0,3	KF 5,7-6,0 3,2-3,4 svs	4
switch-off				8	
Idle stop  End stop	375 400 500 130 240	10,0-16,6 (9,0-17,0 (2,0-10,0) max. 3,0 min. 40,0 max. 40,0		* ALDA-stroke = 7,1 Use adjusting num (46) to correct.	
2.4 Solenoid	cut-in volte(	min 10 V rated voltage 12 V.			

WPP 001/4 FIA 1,7 h3

2. Edition

VE 4/9 F 2300 R 207

Overflow temperature 45° C

supersedes 3.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

company: Fiat X 8/34 engine:

U 460 494 170 DHK 1 688 901 022/130 bar

Fuel injection test tubing 6x2x450 mm

Test Instructions and Test Equipment

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>2</sup>
1.1 Timing device travel	1500	4,1-4,5	mm		
1.2 Supply-pump pressure	1500	5,3-5,9	bar (kg1/cm²)	٥	
1.3 Full-load delivery with	-		cm <sup>3</sup> /1000 strokes	]	
charge-air pressure Full-load delivery without	1500	29,5-30,5	cm³/1000 stroķes	Ì	2,5
charge-air pressure  1.4 Idle regulation	380	10,0-14,0	cm³/1000 strokes		2,5
1.5 Full-speed regulation	2450	19,0-25,0	cm <sup>3</sup> /1000 strokes		
1.6 Start	100	min. 55	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	-			

2. Test Spec	ifications	checking values in t	orackets ( )			
2.1 Timing device	n = rev/min mm	800 1,6-2,4(1,3		500 6-5,0)	2300 7,0-7,8(6,7	-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,1-3,7			2300 7,2-7,8	
Overflow delivery	n = rev/min cm³/10 s	600 41-86(26-98	)		2300 55-138(40-	153)
2.3 Fuel deliveries				-	3. Dimen	tor assembly
Speed control lever	Rot, speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kg1/cm²)	Designation	and adjustment mm
End stop	2900 2650 2450 2300 1500 1000 600	31,8-34,2	(1,5-9,5) (18,0-26,0) (30,8-35,2) (27,8-32,3) (28,7-33,3) (28,5-34,5)		K KF MS SVS	3,2-3,4 5,7-5,9 1,7-1,9 2,8
switch-off					В	
Idle stop	380 400 500	5,0-11,0 max. 1,5	(8,0-16,0) (4,0-12,0)		Observations	
_ End stop	300 400	min. 48 max. 45				
2.4 Solenoid	cut-in voltage	ming ming mated volt	n 10 V age 12 V,			

WPP 001/4 FIA 1.3b

1. Edition

VE 4/9 F 2300 R 207-1

Overflow temperature 45° C

supersedes Fia-Regata company: X 8 / 34

En

0 460 494 196 DHK 1 688 901 022.

Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
4 A Window Andread	1500	4,1-4,5 mm		
1.1 Timing device travel	1500	5,3-5,9		
1.2 Supply-pump pressure		bar (kgf/c	m²)	
1.3 Full-load delivery with	-	cm <sup>3</sup> /1000	strokes	
charge-air pressure Full-load delivery without	1500	29,5-30,5 cm <sup>3</sup> /1000	strokes	max. 2,5
charge-air pressure 1.4 Idle regulation	380	10,0-14,0 cm <sup>3</sup> /1000	strokes	max. 2,5
1.5 Full-speed regulation	2450	19,0-25,0 cm <sup>3/1000</sup>	strokes	
1.6 Start	100	min. 55,0 cm <sup>3/1000</sup>	strokes	
1.7 Load-dependent port-closing	1500			

2. Test Spe	cincations	checking values in brackets (	 <del> </del>		
2.1 Timing device	n = rev/min	800 1	500	2300	
	mm	1,6-2,4(1,3-2,7) (3,6	<u>-5.0) 7.0-7.</u>	8(6.7-8.1)	
2.2 Supply pump	n = rev/min	600		2300	
	bar (kgf/cm²)	3,1-3,7	7,	,2-7,8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 42-83 (27-98)	55-	2300 -138(40-153	)
2.3 Fuel daliveries	<u></u>			3. Dimer	sions for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2900	max. 1,5		K	
	2650 2450	2,0-9,0 (1,5-9,5) (18,0-26,0)	1	i	3,2-3,4
	2300	31,8-34,2 (30,7-35,3)	1	KF	5,7-6,0
	1500	(27,7-32,3)		MS	1,7-1,9
	1000	(27, 7-32, 3) 29,8-32,2 (28, 7-33, 3)		svs	2,8
	600	30,0-33,0 (28,5-34,5)			
11 - h - a M				_	
switch-off				8	
Idie stop	380	( 8,0-16,0) 5,0-11,0 ( 4,0-12,0)		Observations	
	400				
Pad ska-	500	max. 1,5			
End stop	300 400	min. 48 max. 45			
2.4 Şolenoid	cut-in volta		<del></del>		
	<del></del>	rated voltage 12 V.		L	

2. Test Specifications checking values in brackets (

n = rev/min

WPP 001/4 VWW 1.6 x2

1. Edition

Testoil-ISO 4113

VE 4/9 F 2250 R 211 0 460 494 172

Overflow temperature 45° C

supersedes company: VW engine: 086 T

1800

All test specifications are valid only for Boach Fuel-injection Pump Test Benches and Testers mm

**Test Instructions and Test Equipment** 

2250

Pre-stroke setting

2.1 Timing device

ses VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device trave?	1500	3,8-4,2	man	0,75	
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with	1500	41,5-42,5	cm³/1000 strokes	0,75	max. 2,5
charge-air pressure Full-load delivery without	600	24,5-25,5	cm³/1000 strokes	0	
charge-air pressure 1.4 Idle regulation	A 550	2,5-3,5	cm <sup>3</sup> /1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2525	13,0-19,0	cm³/1000 strokas	0,75	İ
1.6 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	-				

1500

LDA = 0.75 bar	mm	1,8-2,6(1,5-	7) 4,8-5,6	(4,5-5,9) 6,	1-6,9(5,8-7,2		
2.2 Supply pump LDA = 0,75 bar	n = rev/min bar (kgi/cm²)	600 2,3-2,9		225 7,0-	50 -7,6	<u>.</u>	
Overflow delivery	n = rev/min cm³/10 s	600 (0 41-86(2	) bar) 26-98) ,		2250 (0,75 bar) 55-138(40-153)		
2.3 Fuel deliveries	<del> </del>				3. Dimen	for assembly	
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm	
electr.	2700 2525 2425 2250 1500 1500 1000** 600 70-400	max. 4,0 25,0-35,0 35,5-37,5 34,0-37,0 34,5-35,5 32,5-35,5	(39,7-44,3 (33,2-37,8 (32,7-37,3)	0,75 0,75 0,75 0 0,30 0,75	K KF MS SVS A B	K1 5,7-6,0 1,2-1,4 2,7	
Ide step  End stop	A 500 B 375 B 425 C 525 150 350	2,7-4,7 12,0-14,0 5,5-8,5 7,0-9,0 min.35,0 max.30,0	(9,0-17,0) (3,0-11,0)		Observations  ** LDA-stroke:6,0 mm Use adjusting nut (46) to correct.  *Residual delivery setting idle setting (LFG) as per VDT-I-460/135		
2.4 Solenoid	cut in voltag	min 1		ł			

1000

3. Dimen	tor assembly
Designation	and adjustment mm
K	K1
KF	5,7-6,0
MS	1,2-1,4
SVS	2,7
<b>A</b>	
В	
Use ad	roke 16,0 mm justing nut o correct.
	delivery idle setting
(LFG) as VDT-I-46	per
Dic of Germany	4.86

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
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**6** 

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,38

1. Edition

VE 4/8 F 2450 L 212 O 460 484 011

Overflow temperature 45° C

company: VW engine: 1,3 1

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

1. Settings	Rot. speed rev/min	Settings	<i>i</i>	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel 1.2 Supply-pump pressure 1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure 1.4 Idle regulation 1.5 Full-speed regulation 1.6 Start	1500 1500 - 1500 A 800 2600 100	4,5-4,9 5,4-6,0 24,5-25,5 2,0-3,0 11,0-17,0 min. 32,0	mm bar (kgf/cm²) cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm²/1000 strokes	bar (kgl/cm²)	max. 2,0
1.7 Load-dependent port-closing	-			_	

2.1 Timing device	n = rev/min	1000	1500	2(	000	2450
	mm	2,2-3,0(1,	9-3,3) (4,0-	5,4) 6,9-/,	/(6,6-8,0)8	,6-9,4(8,3-9,
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 3,3-3,	۵		2450 7.7-8,	2
Overflow delivery	n = rev/min cm³/10 s	600 41-86(26			2450 55-138(4	
2.3 Fuel deliveries		<del> </del>			3. Dimer	SIONS for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2850 2650 2600 2450 1500 600		(5,0-13,0) (10,0-18,0) (18,7-23,3) (22,7-27,3) (14,0-20,0)		K KF MS SVS	3,2-3,4 5.7-6,0 1,3-1,5 4,9
switch-off					A	
electr.	70-400	0		•	В	
End stop	A 550 B 400 B 450 150 300	max. 5,4 11,0-13,0 5,5-8,5 min. 25,0 max. 28,0	(8,0-16,0) (3,0-11,0)		Observations	
2.4 Solenoid	cut-in voltage	min.				

WPP 001/4 Vol 3,10

1. Edition

VE 4/11 F 1900 L 217 O 460 414 027 DHK 1 688 901 022

Overflow temperature 45° C

supersedes company:VOIVO engine: TAMD 31 95 kW

Fuel injection test tubing 1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,3

 $mm \stackrel{+}{=} 0,02(0,04)$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7	mm	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with	1500	93,5-94,5	cm³/1000 strokes	1,0	max. 5,0
charge-air pressure Full-load delivery without	650	58,0-59,0	cm³/1000 strokes	0	
charge-air pressure  1.4 Idle regulation	350	23,0-27,0	cm <sup>3</sup> /1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0	cm³/1000 strokes	1,0	
1.6 Start	100	min. 100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	••				

2. Test Spe	cifications	checking values in brackets (	)		· · · · · · · · · · · · · · · · · · ·		
2.1 Timing device DA = 1,0 bar	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$						
2.2 Supply pump  DA = 1,0 bar  Overflow delivery	n = rev/min bar (kgt/cm²)  n = rev/min cm³/10 s	500 2,4-3,0 700 (0 bar) 41-86 (26-98)					
2.3 Fuel deliveries	Rot. speed	Fuel delivery	Charge-air press.	3. Dimen	Sions for assembly and adjustment tmm		
End stop	2230 2100 2050 1900 1500 1200 700 800 * 650	max. 3,0 (29,5) 62,0-71,0 83,0-86,0 (81,8-(91,3-(94,1-1)) 96,2-98,8 (94,1-1) 95,0-98,0 (93,1-83,5-84,5 (80,6-(94,1-1))	-87,2) 1,0 -96,7) 1,0 100,9) 1,0 -99,9) 1,0	K KF MS SVS	5,2-5,5 1,2-1,4 3,8		
switch-off				A B			
End stop	350 400 480 400 500	7,0-13,0 (20,5-1 7,0-13,0 (5,5-1 max. 3,0 min. 74,0 max. 72,0	Use adj	oke 6,4 mm usting nut correct.			
2.4 Solenoid	cut-in voltag	min. 10 V					

WPP 001/4 Vol 3,1b

1. Edition

VE 4/11 F 1900 L 217-1 Overflow temperature 45° C

O 460 414 028 DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

2. Test Specifications checking values in brackets (

All test specifications are valid only for Bosch Fuel-injection Pump Tost Benches and Testers

supersedes"

4000

company: Volvo

engine: TAMD 31 95 kW

Tost Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting

0.3

mm  $\stackrel{+}{-}$  0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,3-4,7	min	1,0	
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgi/cm²)	1,0	
1.3 Full-load delivery with	1500	93,5-94,5	cm³/1000 strokes	1,0	max. 5,0
charge-air pressure Full-load delivery without	650	58,0-59,0	cm³/1000 stroķes	0	
charge-air pressure  1.4 Idle regulation	350	23,0-27,0	cm²/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2100	31,0-37,0	cm <sup>3</sup> /1000 strokes	1,0	
1.6 Start	100	min. 100,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	_				

4000

LDA = 1.0 bar	ww u = té∧\wiu	1100 150	00	9(5,8-7,2)	
2.2 Supply pump LDA = 1.0 bar	n = rev/min bar (kgf/cm²)	500 2,4-3,0	1900 7 <b>,</b> 5 <b>-</b> 8		
Overflow delivery	n = rev/min cm³/10 s	700 (0 bar) 41-86(26-98)		(1,0 bar) (40-153)	
2.3 Fuel deliveries				3. Dimens	tor assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2230 2100 2050 1900 1500 1200 700 800 * 650	max. 3,0 (29,5-38 62,0-71,0 (62,0-71 83,0-86,0 (81,8-87 (91,3-96 96,2-98,8 (94,1-100 95,0-98,0 (93,1-99 83,5-84,5 (80,6-87 (55,1-61	,0) 1,0 ,2) 1,0 ,7) 1,0 0,9) 1,0 ,9) 1,0 ,4) 0,3	K KF MS SVS	5,2-5,5 1,2-1,4 3,8
switch-off				В	
Idle stop  End stop	350 400 450 400 500	(20,5-29 7,0-13,0 (5,5-14,9) max. 3,0 min. 74,0 max. 72,0	55)	24 V	ectronagne

2.4 Solenoid

cut in voltage

WPP 001/4 Vol 3,1a

1. Edition

Testoil-ISO

VE 4/11 F 1900 L 217-3 Overflow temperature 45° C

supersedes = company: Volvo TMD 31 74 kW

0 460 414 032 DHK 1 688 901 022

Fuel injection test tubing 1 680 750 073

Test Instructions and Test Equipment

see VDT-W-460/...

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers Pre-stroke setting

 $_{mm} \stackrel{+}{=} 0,02(0,04)$ 

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery with 3
1.1 Timing device travel	1500	5,3-5,7	mm	0,8	
1.2 Supply-pump pressure	1500	5,8-6,4	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	1500	70,0-71,0	cm³/1000 strokes	0,8	
charge-air pressure Full-load delivery without	700	53,0-54,0	cm³/1000 stroķes	0	
charge-air pressure 1.4 Idle regulation	350	18,0-22,0	cm³/1000 strokes	0	
1.5 Full-speed regulation	2150	12,0-18,0	cm <sup>3</sup> /1000 strokes	0,8	
1.6 Start	100	min. 90	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	•				

2. Test Spec	cifications	checking values in brackets (	)	
2.1 Timing device LDA = 0,8 bar	n = rev/min	1,5-2,3(1,2-2,6) (	1500 1900 4,8-6,2) 6,3-7,1(6,0-7,4)	
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm²)	500 2,2-2,8	1900 7,2-7,8	
Overflow delivery	n = røv/min cm³/10 s	700 (0 bar) 41-86(26-98)	1900 (0,8 bar) 55-138(40-153)	

	J	<del></del>		
2.3 Fuel deliveries				
Speed control lever	Rot. speed rev/min	Fuel delivery cm²/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2220 2150 2100 1900 1500 700 700 *	max. 3,0 37,0-45,0 68,5-71,5 66,5-69,5 60,5-61,5	(10,5-19,5) (36,5-45,5) (67,7-72,7) (67,8-73,2) (64,6-71,4) (57,6-64,4) (49,9-56,7)	0,8 0,8 0,8 0,8 0,8
switch-off			•	
idle stop	350 400 450	4,5-10,5 max. 3,0	(15,5-24,5) (3,0-12,0)	
End stop	400 500	min. 70,0 max. 65,0		
2.4 Solenoid	cut-in voltag	min.		

3. Dimer	ISIONS for assembly and adjustment mm
К	_
KF	5,2-5,5
MS	1,2-1,4
svs	3,8
A	
В	

\* LDA-stroke 6,3 mm Use adjusting nut (46) to correct.

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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WPP 001/4 VOL 4,1 a

1. Edition

Testoil-ISO

VE 6/11 F 1900 L 218-2 Overflow temperature 45° C 0 460 416 049 DHK 1 688 901 022/130 bar Fuel injection test tubing 6x2x450 mm

supersederolvo-Penta company: TMD 41 110kW

All test specifications are valid only for Bosch Fuel injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,3

mm ±0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	3,6-4,0	mm	0,8	
1.2 Supply-pump pressure	1200	6,2-6,8	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	1500	71,0-72,0	cm <sup>3</sup> /1000 strokes	0,8	3,5(4,0)
charge-air pressure Full-load delivery without	700	56,0-57,0	cm³/1000 stroķes	0	
charge-air pressure  1.4 Idle regulation	350	18,0-22,0	cm³/1000 strokes	0	3,5(4,0)
1.5 Full-speed regulation	2050	17,0-23,0	cm³/1000 strokes	0,8	·
1.6 Start	100	min. 85,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent port-closing	-				

2. Test Spec	HICATIONS	checking values in bri	ackets ( )			
2.1 Timing device _DA = 0,8 bar	n = rev/min mm	700 0,5-1,3(0,2	-1,6) (3,1-	200 16 -4,5) 4,7-5	500 5,5(4,4-5,8)	
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm²)	500 3,5-4,1		19 8,6-	9.2	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	700 (0 bar 41-83(26-98	•	19	000 (0,8 bar 138(40-153)	•
2.3 Fuel deliveries	<u> </u>	I			3. Dimen	SIONS for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
End stop	2130 2050 2000 1900 1500 700 700 *	69.0-72.0	(15,5-24,5) (40,4-45,6) (67,9-73,1) (68,9-74,1) (69,1-75,9) (58,9-64,1) (53,9-59,1)	0,8 0,8 0,8 0,8	K KF MS SVS	5,2-5,5 1,2-1,4 3,8
switch-off					A B	
End stop	400 450 300 500	max. 3,0 min. 85,0 max. 70,0	(15,5-24,5)		USE a	stroke 5,5 mm djusting nut to correct.
2.4 Solenoid	cut in voltage	111 1 11 .	10 Volt tage 12 V.	<del></del>		

WPP 001/4 VOL 4,1b

supersedes Volvo

1. Edition

Testoil-ISO 4113

VE 6/11 F 1800 L 218-3 Overflow temperature 45° C

0 460 416 053 DHK 1 688 901 022

Fuel injection test tubing 1 688 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

0,3 <sub>mm</sub>

+0,02(0,04)

see VDT-W-460/...

engine: TD 41-91 kW

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1200	4,8- 5,2	mm	1,0	
1.2 Supply-pump pressure	1200	6,3-6,9	bar (kgf/cm²)	1,0	
1.3 Full-load delivery with	1000	76,5-77,5	cm³/1000 strokes	1,0	max. 3,5
charge-air pressure Full-load delivery without	750	43,5-44,5	cm³/1000 stroķus	0	
charge-air pressure 1.4 Idle regulation	400	12,0-16,0	cm³/1000 strokes	0	max. 3,5
1.5 Full-speed regulation	2000	15,0-21,0	cm <sup>3</sup> /1000 st/okes	1,0	
1.6 Start	100	min. 90,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	_				

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min	700	1200	1500	1800
LDA=1,0 bar	mm	0,6-1,4(0,3-1,7)	(4,3-5,7)	6,2-6,8(5,8-7,2)	6,2-7,0(5,9-7,
2.2 Supply pump	n = rev/min	700	1500	180	00
LDA=1,0 bar	bar (kgf/cm²)	5,0-5,6	7,0-7,6	7,7-8	3,3
Overflow delivery n = rev/min cm <sup>3</sup> /10 s -		700 (0bar) 41-86(26-98)	1800 (1,0 bar) 55-138 (40-153)		
	cm <sup>3</sup> /10 s	41-86 (26-98)		55-13	8 (40-153

2.3 Fusi deliveries					
Speed Control lever	Rot. speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press. bar (kgf/cm²)	
End stop	2050 2000 1950 1800 1500 1000 750 750 *	74,0-78,0 69,5-72,5	(13,5-22,5) (36,5-45,5) (71,3-76,7) (73,3-78,7) (74,3-79,7) (68,3-73,7) (57,3-62,7) (41,3-46,7)	1,0	
Idle stop	400 450 500	3,0-0,0 max.3,0	( 9,5-18,5) ( 1,5-10,5)		
_ End stop	400 450	min.45,0 max.50,0			
2.4 Solenoid	cut-in voltage	•			

5,2-5,5 0,9-1,1
•
5,5

- LDA-stroke 6,2 mm Use adjusting nut (46) to correct.
  - 24 V Pulling electromagnet

44

WPP 001/4 VMA 1,5a 1. Edition

VE 3/10 F 2100 L 227

Overflow temperature 45° C

company: Motori VM

0 460 403 008

engine: HR 392 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0.4

mm ± 0,02(0,04)

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kg!/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	4,5-4,9	mm	0,8	
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with	1500	57,0-58,0	cm <sup>3</sup> /1000 strokes	0,8	max. 3,0
charge-air pressure Full-load delivery without	500	43,5-45,5	cm³/1000 stroķes	0	
charge-air pressure 1.4 idle regulation	425	9,5-13,5	cm³/1000 strokes	0	max. 3,0
1:5 Full-speed regulation	2330	22,0-29,0	cm³/1000 strokes	0,8	
1.6 Start	100	min. 40	cm <sup>3</sup> /1000 strokes	0	
1.7 Load-dependent port-closing	1500	-			

2. Test Spec	cifications	checking values in b	orackets ( )			
2.1 Timing device LDA=0,8 bar	n = rev/min mm	1000 0,8-1,6(0,			1900 7(6,6-8,0) (	2100 6,9-7,7(6,6-8,
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm²)	600 1,7-2,		-	2100 0-7,6	
Overflow delivery LDA=0,8 bar	n = rev/min cm <sup>2</sup> /10 s	500 41-86 (26			2100 (40-153)	
2.3 Fuel deliveries Speed control lever	Rot.speed	Fuel delivery		Charge-air press.	3. Dimer	1Sions for assembly and adjustment mm
End stop	2450 2330 2250 2100 1500 750 * 750 750 500	49,3-51,7 52,0-53,0 55,0-58,0	(21,0-30,0) (30,8-39,8) (47,8-53,2) (54,8-60,2) (49,1-55,9) (53,1-59,9) (45,1-51,9) (41,1-47,9)	0,8 0,8 0,8 0,8 0,3 0,8 0	K KF MS SVS	- 5,7-6,0 0,7-0,9 6,0
switch-off	425		( 7,0-16,0) ( 0,8- 9,8)	,	B	
End stop	600 1200 350	2,3- 8,3 max. 2,5 min. 45,0	(0,8-9,8)		Use adj	oke 7,5 mm usting nut correct.
2.4 Solenoid	cut-in voltag	min rated volta	. 10 V			· · · · · · · · · · · · · · · · · · ·

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 1 g 13

3. Edition

Er

PES 3 A 80 D 410/3 RS 1324

RSV 325-1250 A 8 C 2168-1 L

Komb.-Nr. 0 400 453 148

supersede 5 • 85

engine F 3 L 912

45 kW/2500 min<sup>-1</sup> tractor DX 3,30

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,9-2,0 (1,85-2,05)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1/</sup> 100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>4</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1250	10,7+0,1	5,6-5,7	0,25(0,35			
325	8,3-8,5	1,0-1,6	0,2 (0,3)			
:						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1. ' / ' '	r rater) speed Control rod travel mm		Intermed	diate rated	speed	Control- lever deflection in degrees 7	•	rated speed Control rod travel mm	IX 9 J	que control Control rod travel mm
loose	800 x =	0,3-0,7 4,0	-	-	•	ca. 19	100	7,9	1250 500 800	10.7-10,8 11,2-11,3 11,2-11,4
ca. 57	9,7 4,0 1565	1290-1300 1 <b>33</b> 0-1360 0,3-1,4					325 450∻51	8,3-8,5 0 = 2,0	1090	10,8-11,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		Rotational- speed limitat  Speed limitat			Starting (	uel delivery 5	4a idle stop	
fest oil te resilmin 1	mp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to ) rev/min 3	rev/min	crn <sup>2</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	rev/min 8	Control root travel mm
1250	55,5 56,5 (54,0-58,0)	1290-1300*	800	48,5-50,5 (46,5-52,5)	100	115,0-125 (112,0-128 =19,5-21, mm RW	(0)	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.86



WPP 001/4 TAM 12,7 a

2. Edition

PE 8 A 95 D 410 LS 2451 ROY 300-1150 AB 1045-1 L

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3 je  $45^{\circ} - 0.5^{\circ} (-0.75^{\circ})$ 

supersedes 1.86 company: TAM

F 8 L 413 F 173 kW/2300 min<sup>-1</sup>

Komb.-Nr. 0 400 648 143

Rotational speed | Control rod | Fuel delivery travel

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)

Difference	Control red travel	Fuel delivery	Spring pre-tensioning (torque-control valve)					

rev/min		mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1150	0	9,3-9,4	8,6-8,8	0,3(0,6)			
30	O	5,9-6,1	1,4-2,4	0,3(0,5)			
		-					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
deflection		Control rod travel	<b>(b)</b>	Degree of deflection of control		Control rod travel		Degree of deflection of control		Control rod travel			0
		rev/min	<b>(2a)</b>	lever	nim\ven	mm (4	)	lever	rev/min	inm (	3) rev	r/min	mm
1	2	3		4	5	6		7	8	9	10		11
max.	1200	15,2-1	7,8	-		-		ca. 16		min.7,5		00	0,7-0,9
4.0	0 2	4400 4	200	-	Į				300	5,9-6,1		00 50	3,9-4,1 6,9-7,1
ca. 46	8,3 4,0	1190-11 1225-11					i					0C	8,4
	1350	0-1				1		330-44	<b>,</b>				0,1
								(3a)				j	

Torque control travel a = 0,40 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten rev/min	d stop np. 40°C (104°F) 2	limitation intermediate speed	Fuel deliv high idle s rev/min	very characteristics 5a coed 5b cm³/1000 strokes	idie switchir		Torque-control 5 travel Control rod travel rev/min   mm		
1	2	3	4	5	6	7	8	9	
1150	86,0-88,0 (84,0-90,0)	1190-1200*	1000 700	86,5-89,5 (84,5-91,5) 86,5-89,5 (84,5-91,5)	100	116,5-126,5 (113,5-129,5	500 765	9,3+0,1 9,7+0,1 9,5+0,2 9,4+0,2	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4 .00



Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 WPP 001/4 MAN 9,2 f 2 1. Edition and Governors

PES 5 A 95 D 320 LS 2504

RQV 250-1100 AB 978 DR

supersedes

company: MAN

Komb.-Nr. 0 400 845 037 1-3-5-4-2 je 72 °  $\stackrel{+}{=}$  0,5 ° ( $\stackrel{+}{=}$  0,75 °)

engine: D 2565 MUL

141 kW/2200 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	11,4-11,6	0,3 (0,6)			
250	6,4-6,6	1,5-2,1	0,3 (0,5)			
					*:	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3		mm 11
max. ca. 42	1140 10,3 4,0 1300	14,4-17,6 1140-1150 1175-1205 0 - 1,0	-	<b></b> .	-	ca. 13		min.7,2 5,6-5,8 375 = 2,0 max. 1,0	200 500 800 1100	0,7-0,9 3,4-3,7 4,8-5,2 7,3
						<u>3</u> a				

Torque control travel a = 0.5

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed (2b) limitation intermediate speed			Starting Idle switching	• 0	Torque- travel	Control (5)
ev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travei mm
,	2	3	4 .	5	6	7	8	9
1100	114,0-116,0 (112,0-118,0		800	111,0-115,0 (109,0-117,0		13,7-14,3 mm RW	800	11,3+0 11,5+0 11,8+0
			500	108,5-112,5 (106,5-114,5)	250	15,0-21,0 = 6,5 mm		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,1 c 4

2. Edition

PES 4 A 80 D 410/3 RS 2523

RSV 325-1400 A 8 C 1022 L

supersedes 1.85

Komb.-Nr. 0 400 864 046

KHD company

F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)

**Testoil-ISO 4113** 

mm (from BDC)

( , , , ,	,,				
Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
2	3	4	2	3	6
10,2+0,1	5,7-5,8	0,2 (0,35)			_
8,0-8,2	0,9-1,5	0,2 (0,3)			
	Control rod travel mm 2 10,2+0,1	travel mm 2 cm³/100 strokes 3  10,2+0,1 5,7-5,8	Control rod travel  mm 2 cm³/100 strokes 2 cm³/100 strokes 4 cm³/ 100 strokes 4 0,2 (0,35)	Control rod travel  mm 2 cm³/100 strokes 2  10,2+0,1 5,7-5,8 0,2 (0,35)	Control rod travel  mm 2 cm³/100 strokes 2 cm³/100 strokes 4 cm³/100 strokes 2 cm³/100 strokes 4 cm³/100 strokes 2 3

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

14 • 1	r rated speed Control rod travel mm		Intermed	tiate rated	speed	Control- lever deflection in degrees 7		rated speed  Control rod  travel  mm  9	IX 5 /	rque control Control rod travel mm
loose	800 x =	0,3-1,0 3,5	-	_	-	ca. 23	325 100	7,6 min.19,5	1400 900 500	10,2-10,3 10,8-11,1 11,4-11,5
ca. 69	9,2 4,0 1600	1440-1450 1470-1500 0,3-1,4		,			325 670 <b>-</b> 7	8,0 <b>-</b> 8,2 30 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ill-load stop	6 Rotational- speed limitat		nel delivery paracteristics	Starting (			
Test oil to rev/min	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1400	57,0-58,0 (55,5-59,5)	1440-1450*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

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4.86

K2

## Test Specifications Fuel Injection Pumps and Governors

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WPP 001/4 DAF 6,2 m

Ε'n

**\*\*stoil-ISO 4113** 

PE 6 A 85 D 320 RS 2546 RSV 250-750 A 7 B 2125 R Komb.-Nr. O 400 676 168

Komb.-Nr. O 400 676 168
Values apply to fuel-injection test tubing
1 680 750 015

company DAF engine: DD 575 DF

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25 (2,10-2,30)

mm (from BDC)

; RW = 9,0

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	/3	4	2	3	6
750	12,1+0,1	62 - 64	0,3(0,45)			
250	8,4-8,6	0,9 - 1,5	0,25(0,45			
			İ			•
			į			• •
Port closi	 na differ	ence between co	ntrol-rod	travel	mm and max.	3 - 4° camsha

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed		Intermediate	rated spe	ed	4 Lower	r rated spe	ed	3 Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3 - 1,0	-	-	-	ca. 15	250	8,5		<b></b> -
	x =	4,5					250	8,4-8,6		
§ ·40	11,1 4,0 955	770-780 78,5-805 0,3-1,7	;				260-3	20=2,0		

<sup>\*\*</sup> Set idle-speed auxiliary spring at 2 mm control-rod travel, The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-le	oad stop			Starting Idle	fuel delivery	5a Idle stop		
Test oil ten rev/min 1	np. 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes	Continue of travel of the contract of the cont	
750	61,5 - 63,5 (59,5 - 65,5)	770-780*	-	-	100	19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-ISO 4113** 

## Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 6,2 i 1 5. Edition

PF 6 A 90 D 320 RS 2547

RSV 250-1200 A5B 779 R

supersede 2.84

Komb.-Nr. 0 400 676 141

company: DAF DT 615 engine:

O 400 676 153 Values apply to fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	stroke	2,2-2,3 (2,15-2,35)	mm (from BDC)	<b>;</b>	RW = 9.0	Difference between CRT9 + 21 2,5-3,5°
Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	7,1-7,2	0,3(0,45			
250	5,9-6,1	0,9-1,3	0,25(0,4	5)		
					j	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper	rated speed	 J	Intermediate	rated spe	ed	4 Lowe	r rated sp	ed	(3) To	rque control
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 15	250	5,5	1000	10,8+0,
	×	3,25					250	5,9-6,1		11,2+0, 11,0+0,
⊙ <sup>ca.51</sup>	9,8 4,0 1450	1240-1250 1280-1310 0,3 - 1,7						90=2.0	•	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat.				fuel delivery	5a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1 2		Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes <sup>3</sup>	rev/min 8	Control rod travel mm
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)	1240-1250*	_JA 600	0 bar 51,5 - 53,5 (49,5 - 55,5)	100	133,0-143, = 19,5 - 21,0 mm RW	Ì	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

BOSCH

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Test at n =

1000

rev/min decreasing pressure - in bar gauge pressure

DAF 6,2 i 1 -2-

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 2547 +	0,7 bar		10,8 - 10,9
RSV A5B 779 R		0,25	10,6 - 10,7
		0,21	10,1 - 10,4
		0	9,8 - 10,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 6,2 n
6. Edition

Eπ

PE 6 A 90 D 320 RS 2577

RSV 250-750 A 7 B 2125 R

supersedes 10.84

engine: DT 615

Komb.-Nr. 0 400 676 167
Values apply to fuel-injection test tubing
All test Specification Life valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

RW = 9.0 mm

Port closing at prestroke (2,15-2,35)

mm (from BDC)

	2,20	0-2,30				
Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
750	11,0+0,1	7,5 - 7,7	0,4 (0,55	<b>}</b>		
						etween control-ro
			t	ravel 9 mm	and max. 2,5	-β,5° camshaft
250	5,9-6,1	0,8 - 1,4	0,2(0,4)	·		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	crated speed Control rod travel mm	Control rod travel mm rev/min	Intermed	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	(3) To rev/min	rque con Control travel mm	1
loose	800 X =	0,3-1,0 5,0				ca.15	250 100	6,0 min.19,5	-		-
ca. 40	10,0 4,0 955	770-780 785-805 0.3-1.7					250 260-320	5,9=6,1 = 2,0 **			

\*\* Set idle-speed auxiliary spring at 2 mm control-rod travel,

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F)	Rotational- speed limitat Note: changed to) rev/min  Rotational- speed limitat characteristics cm <sup>3</sup> /1000 strokes			Starting f Idle rev/min	uel delivery 5	(4a) Idle stop   Control rod   travel   rev/min   mm		
1	2	3	4	5	6	7	8	9	
750	75,0-7 <b>7</b> ,0 (7 <b>3</b> ,0-7 <b>9</b> ,0)	760-770*	-	-	100	19,5-21,0 mm RW	-	-	
							-		

Checking values in brackets

\* 1 mm less control rod travel than col 2

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## Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MAN 15,0 d 1

2. Edition

PE 10 A 95 D 520/5 LS 2604

RQV 250-1150 AB 1189 R

supersedes9.83 MAN

Komb.-Nr. 0 400 649 240

engine: D 2840 ME

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4 $0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315^{\circ} + 0,5^{\circ} (+ 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod	1,65-1,85) Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)	
rev/min mm		cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes	mm 6	
1150	13,0+0,1	12,8-13,0	0,35(0,6)				
250	6,9-7,1	1,0-1,6	0.35(0,55	)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed		Lower rate	dspeed		Stidioos	leeve travel
deffection	rev/min Control	travel \		Degree of deflection of control		Contro travel	ł rod	Degree of deflection		Control rod travel	0	• ①
	rod travel mm	ten/wiv (	2a)	lever	rev/min	mm	4	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6		7	8	9	10	11
max.	1230	15,2-17	,8	-			•	ca. 12	250	6,9-7,1	350	2,0-2,5
•				-		}			ļ	}	850	5,8-6,0
ca. 62	12,0	1190-12				ľ			400-	460=2,0	1150	7,5-7,9
	4,0	1280-13	10						1		1300	9,6
	1400	0 - 1	,0									
									1			
								<b>3</b> a				

Torque control travel a = 0,5 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		limitation intermediate speed	Fuel delivery characteristics 5e high idle speed 5b		Starting Idle switchir	• 0	Torque travel	-control (5) Control rod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4 .	5	6	7	8	9
1150	128,0-130,0 (122,5-128,5		<del>-</del>	<b>-</b>	100	15,9-16,5 mm RW		13,0+0, 13,5+0, 13,4+0, 13,0+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 KHD 9,6 i 1

4. Edition

PE 6 A 95 D 410 LS 2621 RQV 300-1250 AB 1195 L

Komb.-Nr. 0 400 646 271

1-6-5-4-3-2

0-75-120-195-240-315° + 0,5° (+ 0,75°)

supersedes 9.85

company: KHD

F 6 L 413 F

141 kW / 2500 min<sup>-1</sup>

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel injection Pump Settings 2,0-2,1 Part closing at prestroke (4,05-3,15) mm

Port closing at prestroke mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fue? delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,4+0,1	9,2 - 9,4	0,35(0,6)			
300	6,4-6,6	0,8 - 1,4	0,35(0,55	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
	rev/min Control rod travel	Control rod travel	(la)	Degree of deflection of control		Control rod travel	Degree of deflection of control	deflection travel			0
lever	mm	rev/min	(2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	ten/wiu	mm
11	2	3	$\smile$	4	5	6	7	8	9	10	11
max.	1375	15,2-17	,8	-	-	-	ca. 18	100 300	min.8,0 6,5-6,7	300 500	1,2-1,3 2,6-2,9
ca. 51	9,4 4,5	1365-139								1000 1300	5,4-5,6 7,7-7,8
1	1500	0 - 1	,0			1	375-485			1380	8,7
							<b>3</b> a				

Torque control travel a = 0,5 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (2b) timitation intermediate speed			Starting Idle switching	ng point	Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 🐠	rev/min	cm <sup>3</sup> /1000 strokes	tev/win	cm³/1000 strokes	rev/min	mm
١,	2	3	4	5	8	7	8	9
1250	91,5 - 93,5 (89,5 - 95,5)	1290-1300 *	750	93,0-96,0 ((90,5-98,5)	100	116,5-126,5 (113,5-129,5	<b>500</b> 850	

Chacking values in brackets

\* 1 mm less control rod travel than col. 2

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 LIE 5,6 a

3. Edition

En

PES 4 A 95 D 410 RS 2685

RSV 400-1000 A 1 C 2187 L

supersede 10.85
company D 904 NA
engine 70 kW

Komb.-Nr. 0 400 874 238

Values apply to fuel-injection test\_tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,7-2,8 (2,65-2,85)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	7,9-8,1	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55			
			_			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe	r rated speed	rev/min	Intermed	diate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of	Control rod	Control rod travel				Control- lever		Control rod travel		Control rod travel
deflection of control	mm	mm rev/min		]		deflection in degrees	rev/min	mm	rev/min	wie
lever	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	ca. 23	400	5,7	1000	9,7-9,8
	x =	2,5					100 400	min.19,5 6,1-6,3	550 430	9,,7-9,9 10,9-11,5
ca. 50	8,7 4,0	1040-1050 1065-1095		,				515-2,0		
<b>2</b> a	1230	0,3-1,4			·					

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Rotational- speed limitat Note: changed to) rev/min'		el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting fidle	uel delivery 5	•••	Control rod travel mm
1000	79,0-81,0 (77,0-83,0)	1040-1050*	600	69,0-72,0 (56,5-74,5)	100	120.0-130 (117,0-133 = 19,5-21, mm RW	,0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 LIE 5,6 b

3. Edition

PES 4 A 100 D 410 RS 2686

ROV 400-1000 AB 1203 L

Komb.-Nr. 0 400 844 085

Values apply to fuel-injection test tubing, 1  $680\ 750\ 008$ 

supersedes 10.85 company: Liebherr D 904 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
2,7-2,8
Port closing at prestroke (2,65-2,85) mm mm (from BDC) Spring pre-tensioning (torque-control valve) Control rod travel Difference **Fuel delivery** Control rod travel **Fuel delivery** Rotational speed cm<sup>3</sup>/ 100 strokes cm<sup>3</sup>/100 strokes cm<sup>3</sup>/100 strokes 11,9-12,1 0,35(0,6 11.4+0. 1000 0,35(0,59)400 5,9-6,1 1,0-1,6

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection	Control rod travel	Control rod travel mm rev/min 3		Degree of deflection of control tever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1070	15,2-17	7,8	-	. <del>-</del> .	-	ca. 11	100 400	min.7,5 5,9-6,1	600	1,0-1,1 3,7-4,0
ca. 62	10,4 4,0 1250	1040-10 1105-11 0 <b>-</b>					420-53	p D		1000 1150	7,5-7,6 9,9
							<b>3</b> a)				

Torque control travel a = 1,40

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		timitation intermediate speed	high idle s	rery characteristics 5a	Starting Idle switching		Torque- travel	Control Control rod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min (4a)	rev/min	cm³/1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4 .	5	6	7	8	9
LDA 1000	0,7 bar 119,0-121,0 (117,0-123,0		LDA 700 LDA 500	0,7 bar 128,5-131,5 (126,0-134,0 0 bar 87,5-90,5 (85,5-92,5)		19,5-21,0 mm RW	500 900	11,4+0, 12,8+0, 11,7+0, 12,5+0,

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.86

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LIE 5,6 b

- 2 -

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 4 A RS 2686 +RQV AB 1203 L	0,70	0 0,40 0,33	12,8-12,9 10,4-10,5 11,8-11,9 10,6-10,8

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

**Festoil-ISO 4113** 

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 LIE 8,4 b

2. Edition

PES 6 A 100 D 410 RS 2687

ROV 400-1000 AB 1203 L

supersedes 9.85 Liebherr company:

Komb.-Nr. 0 400 846 536

Values apply to fuel-injection test tubing 1 680 750 008

D 906 T

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at pres	troke (2	2,65-2,85)	mm (from BDC)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,4+0,1	10,5-10,7	0,35(0,6)			
400	6,3-6,5	1,0-1,6	0,35(0,55	)		
Port closi max. 4-5°		ence between c	ontrol-rod	travel	2,0 mm and	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermedial	e rated sp	eed	Lower rated	speed	•	Sliding s	leeve travel
Degree of deflection of control lever	rod travel	travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control laver	rev/min	Control rod travel	rev/min	1 mm
1	2	3	4	5	6	7	8	9	10	11
max.	1070	15,2-17,8	3 -	\ - ·	- (	a. 14		min.7,9	375	1,0-1,1
ca. 62	10,3 4,0	1040-1050 1105-113					400	<sup>1</sup> 6,3-6,5	600 000 150	3,7-4,0 7,5-7,6 9,9
	1250	0-1,0			•	420-530				
						<b>3</b>			<u> </u>	

Torque control travel a = 1,4

#### C. Settings for Fuel Injection Pump with Fitted Governor

	nd stop mp. 40°C (104°F) 2	limitation intermediate speed	high idle s		idle switchir	ng point	travel	Control octravel
rev/min	cm³/1000 strokes	rev/min	tev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4 .	5	8	/	8	<u> </u>
LDA 1000	0,7 bar 105,0-107,0 103,0-109,0)		LDA 700 LDA 500	0,7 bar 118,5-121,5 (116,0-124,0 0 bar 87,5-90,5 (85,5-92,5)		105,0-115,0 102,0-118,0) =19,5-21,0 mm RW	500	11,4+0, 12,8+0, 11,8+0,

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Checking values in brackets

\* 1 mm less control rod travel than col. 2

K12

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

LIE 8,4 b

-2-

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PES 6 ARS 2687 +RQVAB 1203 L	0,70	0 0,40 0,37	12,8-12,9 11,3-11,4 12,4-12,5 11,6-11,8

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 LIE 8,4 a

3. Edition

En

PES 6 A 95 D 410 RS 2689 RSV 400-1000 A 1 C 2187 L Komb.-Nr. 0 400 876 322

supersedes 10.85 company engine D 906 NA 150 kW

Values apply to fuel-injection test tubing 1 680 750 008

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,7-2,8 (2,65-2,85)

Port closing at prestroke (

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,7-9,8	8,1-8,3	0,35(0,6)			
400	6,1-6,3	1,0-1,6	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	liate rated	speed:	Control- lever deflection in degrees 7		rated speed Control rod travel mm	( 5 )	rque control   Control rod   travel   mm
loose	800 x =	0,3-0,7 2,5	-	-	- -	ca.23	400 100	5,7 min.19,5	1000 550 430	9,7-9,8 9,7-9,9 10,9-11,5
ca. 50	8,7 4,0 1230	1040-1050 1065-1095 0,3-1,4		,				6,1-6,3 5 = 2,0	730	10,3-11,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

II-load stop	6 Rotational-		• •	Starting t	uel delivery 5	(4a) Idl	e stop
mp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
2	3	4	5	6	7	8	9
81,0-83,0 (79,0-85,0)	1040-1050*	600	70,0-73,0 (67,5-75,5)	100	120,0-130 (1 <b>17</b> ,0-133	0 - 0)	-
				400	10,0-16,0 (7,5-18,5)		,
	mp. 40°C (104°F) cm³/1000 strokes 2 81,0-83,0	mp. 40°C (104°F)  cm³/1000 strokes  2  81,0-83,0  speed limitat Note: changed to) rev/min 3	mp. 40°C (104°F)  cm³/1000 strokes  2  81,0-83,0  speed limitat Note: changed to) rev/min 3  4  800  1040-1050*  600	speed limitat Note: changed to) rev/min rev/min cm³/1000 strokes 2	mp. 40°C (104°F)  cm³/1000 strokes 2  81,0-83,0 (79,0-85,0)  speed limitat Note: changed to) rev/min 3  rev/min 6  70,0-73,0 (67,5-75,5)	speed limitat Note: changed to) rev/min 3	mp. 40°C (104°F)  cm³/1000 strokes 2  81,0-83,0 (79,0-85,0)  speed limitat Note: changed to) rev/min 3  rev/min 4  5  600  70,0-73,0 (67,5-75,5)  100  120,0-130 (117,0-133 0)

Checking values in brackets

\* 1 mm less control rod travel than col 2

**BOSCH** 

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 DAF 6,2 o 1

2. Edition

E

PES 6 A 95 D 320 RS 2693 Z Komb.-Nr. 0 400 876 333

RSV 300-1300 AOC 2195 R

supersedes 0.85
company: DAF
erigine: DNT 620

Values apply to fuel-injection test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)

estoil-ISO 4113

; RW = 7,5 - 10,5 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm <b>(2)</b>	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2 .	3	6
850	12,2+0,1	8,7-8,9	0,35 (0,6)			
300	6,1-6,3	0,6-1,2	0,35(0,55)			
Port clo	sing differ	ence between	control-rod	travel 9	mmn and max.2,5	+ 3,5 ° camsha

mm (from BDC)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control   Control rod   travel   mm
loose	800 x =	0,3-0,7 5, <b>5</b>				ca. 27	300 100	5,7 min.19,5	1290 500 10 <b>2</b> 0	11,6-11,8 12,2-12,3 11,9-12,1
ca. 58	10,6 4,0 1595	1340-1350 14 <b>30</b> -1460 0,3-1,4		•			300 570-630	6,1-6,3 =2,0		-

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	ill-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting t	luel delivery 5	(4a) Idi	e stop
Test oil to rev/min 1	emp. 40°C (104°F) crn³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
LDA 850	0,7 bar 87,0-89,0 (85,0-91,0)		LDA 1290 LDA 600	0,7 bar 85,0-87,0 (82,5-89,5) 0 bar 65,0-67,0 (63,0-69,0)	300	125,0-135, (122,0-138, 6,0-12,0 (3,5-14,5	0)	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 3

4.00

rev/min decreasing pressure – in bar gauge pressure Test at n = 600 Control rod travel-Pump/governor Setting Measurement difference Gauge pressure = Gauge pressure = mm (1) bar 12,2-12,3 11,2-11,4 12,0-12,1 11,5-11,7 PES 6 A..RS 2693 Z + AOC 2195 R 0,70 0,**29** 0,25

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

DAF 6,2 o 1

## Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,2 a

2. Edition

PE 8 AM 90 D 321 RS 2014

RQV 275-1500 AB 837 R

supersedes 6.85

Komb.-Nr. 0 405 058 201

company: RVI

KOIID.-NI. 0 405 056 201

ngine: HS 115

1-8-7-3-6-5-4-2 je 45  $^{\circ}$   $^{\pm}$  0,5  $^{\circ}$  ( $^{\pm}$  0,75  $^{\circ}$ )

191 KW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	stroke	2,15-2,25 (2,10-2,30)	mm (from BDC)	•	Port closing	mark cyl.7
Rotzfional speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,2+0,1	8,7-8,8	0,3(0,45			
275	6,6-6,8	1,6-2,0	0,45(0,65	)		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

estoil-ISO 4113

Upper rated s	speed			Intermediate	rated sp	ed		Lower rated	speed		Stiding s	leeve travel
deflection	rev/min Control rod travel mm	mm	(3) (28)	Degree of deflection of control lever	rev/min	Control rod travel mm	·	Degree of deflection of control lever	rev/min	Control rod travel mm (3	) rev/min	0
1	2	3		4	5	6		7	8	9	10	11
max.	1650	15,2-17,	8	•	• -	-		ca. 12		min. 8,8		0,5-0,7 2,0-2,2
ca. 66	9,2 4,0	1595-160 1660-169						225 70			800 1100	3,9-4,1 5,5-5,7
								325 <b>- 3</b> 9	P		1490	8,6
								<b>3</b> 9				

Torque control travel a = mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten	d stop np. 40°C (104°F) . 2	limitation intermediate speed	Fuel dell high idle	very characteristics 5a speed 5b cm³/1000 strokes	idle switchin	$\mathbf{\circ}$	Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	•
1200	87,0-88,0 (85,0-90,0)	1595-1605	1	-	100	158,0-168,0 (155,0-171,0 = 17,5-17,9 mm RW		-

Checking values in brackets

\* 1 mm less control rod travel than cot. 2

4.86

BOSCH

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4

WPP 001/4 VOL 6,0 j

5. Edition

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004 RQV 300...1150 MW 8/2 R

1- 5- 3 - 6 - 2 - 4 0-60-120-180-240-300 ± 0,5° (0,75°) supersedes 4.85

company: Volvo

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

l	Port closing at pres	stroke (	2,75-2,95)	mm (from BDC)	; RW :	= 9,0-12,0 mm	
	Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
l	rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
ļ	1	2	3	4	2	3	6
j	1000	11,5+0,1	9,4-9,6	0,35(0,6)			
	300	5,2-5,4	0,95-1,35	0,35(0,55			
		<u>.</u>					
		Ī	1		J	1	i

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	e rated sp	eed	Lower rated	speed	•	Slidina s	leeve travel
deflection	rev/min Control rod travel	Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever		rev/min (28	lever	rev/min	mm (4)	lever	rev/min	mm (3)	nim\ver	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150 1400	15,2-17,8 0-1,0	-	· <b>-</b> ·	_	ca. 11	300	min.7,0 5,2-5,4	300 800	1,1-1,2 4,3-4,6
ca. 50	10,5 4,0	1190-1200 1235-1265					3/0-2	130=2,0	1190	9,2
				ļ 		<u>3a</u>				

Torque control travel a =

ma

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		intermediate speed	1 · · 1			fuel delivery (6) ng point	Torque- travel	Control cod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	ww
1	2	3	4	5	6	7	8	9
1000	94,0-96,0 (92,0-98,0)	1190-1200*		·	100 300	20-21 mm R 120,0-130,0 (117,0-133,0 9,5-13,5 (7,0-16,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

Timilios conduitos de los diancos. 2

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RV1 8,8 k 2

9. Edition

PES 6 MW 100/320 RS 1016 RQV 300 - 1400 MW 25-1 Komb. 0 403 446 122 1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$  supersedes 12.85

 $_{\text{company:}} \ \ RVI$ engine:

MIDR 06.02-12 125 kW (170 PS)

\*Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres	stroke	3,00-3,10	mm (from BDC)	mm (from BDC) RW = 9,0 - 12,0 mm							
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 9					
1400	11,1+0,1	9,1-9,3	0,35(0,6)								
300 900 500	6,2-6,3 11,1+0,1 9,8-9,9		0,35(0,55 0,5(0,7)								

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	speed		Intermediate	rated sp	eed	Lower rated	speed	•	Slidina s	iceve travel
deflection	rev/min Control	Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control	}	Control rod travel		•
of control lever	rod travel	rev/min (2a)	lever	rev/min	mm (4)	tever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1400 1650	15,2-17,8 0-1,0		•		ca.12	200 300	max.7,5 5,8-5,9		
ca.ô2	10,1	1455-1465 1575-1605				<b>3</b>	490-5	50 = 2,0		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

rev/min cm³/1000 strokes 1 2  LDA 0,5 bar	rev/min 4a	rev/min	cm <sup>3</sup> /1 <b>000 strokes</b> 5	rev/min 6	_	rev/min 8	travel mm
1 2 0.5 bar	3	4	5	6	7	ia i	•
1400 91,5-93,5 (89,5-95,5)	1455-1465*	LDA 900 LDA 500	0,5 bar 87,5-91,5 (85,5-93,5) 0 bar 59,0-61,0 (57,0-63,0)	100 300	91,5-93,5 (89,5-95,5) 9,5-13,5 (7,0-16,0) 230(80-250)		-

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Checking values in brackets

1 mm less control rod travel than col. 2



Pump/governor	Setting	Measurement	diminution Control rod traveldifference
	Gauge pressure =	bar Gauge pressure =	bar mm (1) .
RS 1016 mit MW 25-1	0,23	0,5 0,2 0	10,7-10,9 11,1-11,2 10,2-10,3 9,7-9,8

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum@ull-load control rod travel)

K<sub>26</sub>En

WPP 001/4 RVI 8,8 f

5. Edition

PES 6 MW 100/320 RS 1016 0 403 446 129

RQV 300-1400 MW 25-2

supersedes 10.84

company: RVI

MIDR 06.02-12

125 kW (170 PS)

1-5-3-6-2-4 0-60-120-180-240-300

\*Start-of-delivery mark 8° after start of delivery with control-rod travel 10.5 mm All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1400	11,1+0,1	9,1-9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55	)		
900	11,1+0,1		0,5 (0,7)			
500	9,4+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	eed	Lower rate	speed	•	Stidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel . mm 3	rev/min	1
max.	1400 1700	15,2-17 0- 1		-	·-	-	ca. 13	300 200	5,8-5,9 max.7,5	200 300	0,8 1,4
ca. 62	10,1	1455-14 1575-16					(3a)	490-	550 = 2,0	600 1000 1200 1400	4,1 5,7 6,8 8,1

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of Control-ro Test oil ter		limitation intermediate speed	high idle s	very characteristics 5a	Starting Idle switchir		Torque- travel	control 5  Control rod
rev/min	cm³/1000 strokes	rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	tev/win	mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,7 bar 91,0-93,0 (89,0-95,0)	1455-1465*	LDA 900	0,7 bar 86,0-90,0 (84,0-92,0)	100	94,0-104,0 (91,0-107,0)		
		·	LDA 500	0 bar 52,0-54,0 50,0-56,0	300 100-	9,5-13,5 (7,0-16,0) 230 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n = rev/min decreasing pressure - in bar gauge pressure

| RVI 8,8 f | - |

500			RV1 8,8 f
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1016 mit RQVMW 25-2	0,12	0,16 0 0,7	9,9-10,0 10,7-10,8 9,4- 9,5 11,1-11,2

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

K22

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 VOL 6,1 h

2. Edition

engine:

PES 6 MW 100/320 RS 1119 RQV 300-1400 MW 57 0 403 446 152

supersedes 10.85

Volvo company: TD 61.3012

132 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres		3,20-3,30 3,15-3,35)	mm (from BDC)	9-12 mm	RW	
Rotational speed	Control rod travel	Fuel delivery	Difference cm³/	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm .6
1000	11,6+0,1	9,0-9,2	0,35(0,6)			
300	6,9-7,0	1,6-2,0	0,35(0,5)			
1000	10,3+0,1					
		ĺ	•			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated	speed		Intermediate	e rated sp	eed	Lower rated	speed		Slidina s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod (a) travel mm (2a) 3	Degree of deffection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1480 1725	15,2-17,8 0-1,0				ca. 16	300 100	6,9-7,0 min.8,5		
ca. 62	10,6 4,0	1440-1450 1595-1625								
						(3a)	_			

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten	d stop np. 40°C (104°F) 2	Rotational-speed (2b) limitation intermediate speed rev/min (4a)	Fuel delin high idle s rev/min	pery characteristics 5a peed 5b cm³/1000 strokes	idle switchin	fuel delivery 6 ng point cm³/1000 strakes	Torque- travel	control 5 Control rod travel mm
],	2	3	4 .	5	6	7	8	9
LDA 1000	0,7 bar 90,0-92,0 (88,0-94,0)	1440-1450*	LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140-160 (137-163) 16,0-20,0 (13,5-22,5)		•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

550

rev/min decreasing pressure – in bar gauge pressure

VOL 6,1 h -2-

Pump/governor	Setting	Measurement	diminution , Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
RS 1119 with MW 57	0,20	0,30 0,70 0	10,5-10,6 11,2-11,5 11,6-11,7 10,3-10,4

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

## Test Specifications Fuel Injection Pumps (1) and Governors

40

WPP 001/4 VOL 6,1 g

2. Edition

oil-150 4113

PES 6 MW 100/320 RS 1119-1 RQV 300-1400 MW 57-1 0 403 446 153 supersed \$0.85 Volvo company TD 61.3012 engine: 150 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres		3,20-3,30 3,15-3,35)	mm (from BDC)	9.0-12.	O mm RV	
Rotational speed rev/min		Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,	1 10,4-10,6	0,35(0,6)			
300	6,3-6,4	1,6-2,0	0,35(0,55	)		
1000	10,1+0,	1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediat	e rated sp	eed	Lower rated	speed	a	Sliding s	leeve travel
	rev/min Control rod travel mm	Control rod (1a travel mm (28	of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
1	2	3	4 .	5	6	7	8	9	10	11
max.	1480 1700					ca. 13	300 100			
ca. 61	11,0 4,0	1440-145 1590-162		:						
						<b>3</b> 5				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten rev/min		Rotational-speed (2b) limitation intermediate speed rev/min (4a)	high idle s	very characteristics 5a speed 5b cm³/1000 strokes	Starting fuel delivery Idle awitching point rev/min cm³/1000 strokes		Torque- travel	Control 5  Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1000	0,7 bar 104,0-106,0 (103,0-109,0		LDA 1000	0 bar 75,0-77,0 (73,0-79,0)	100 300	140,0-160,0 (137,0-163,0 16,0-20,0 (13,5-22,5)	))	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**BOSCH** 

rev/min decreasing pressure – in bar gauge pressure VOL 6,1 g Test at n = 550 diminution , Control rod travel-difference Measurement Setting Pump/governor Gauge pressure = bar mm Gauge pressure = 11,5-11,8 10,5-10,6 10,1-10,2 12,0-12,1 0,28 RS 1119-1 with RQV..MW 57-1 0,15 0,7

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

-2-

1,5

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7a17

1. Edition

En

Testoil-ISO 4113

PES 6 MW 100/720 RS 1125 RSV 300-1300 MWO A 317

0 403 476 028

supersedes -

Daimler-Benz company: OM 362 LA

141 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Values apply to fuel-injection test tubing A. Fuel Injection Pump Settings

1 680 750 008

Port closing at prestroke

3,20-3,30 (3,15-3,35)

mm (from BDC)

RW = 9.0-12.0 mm

				,	30 1230 11417	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1280	11,8+0,1	9,2-9,4	0,35(0,6)			
300 800 500	5,9-6,0 11,8+0,1 9,7-9,8	1,2-1,6	0,35(0,5) 0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed		Intermediate rated speed			4	Lower	rated speed	3 to	rque control
Degree of deflection	travel	travel				Control- lever		travel		travel
of control lever	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min	11
loose	800	0,3-1,0				ca. 16	300	5,9-6,0		
							100	min.19,0		
ca.59	1400-1	340 = 10,8 430 = 4,0 0,3-1,7		•						

The numbers denote the sequence of the tests Set idle-speed auxiliary spring at 2 mm control-rod travel,

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ult-load stop emp. 40°C (104°F)	Rotational- speed limitat. Note: changed to)		el delivery aracteristics	Starting fi Idle	uel delivery 5	da) tdle stop   Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1280	0,9 bar 92,0-94,0 (90,0-96,0)		LDA 800 LDA 500	0,9 bar 92,0-94,0 (89,0-97,0) 0 bar 50,0-52,0 (48,0-54,0)	100 300	80,0-90, (77,0-93, 12,0-16, (11,0-17,	)) )	

\* 1 mm less control rod travel than col 2

12.85

Note: Test elec. unlocked starting fuel delivery (EES) with 24 Volts.

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.
4. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

rev/min decreasing pressure – in bar gauge pressure Test at n = MB 5,7a17 500 diminution Control rod travel-Pump/governor Setting Measurement difference **(1)** Gauge pressure = bar mm Gauge pressure = RS 1125 mit 11,4-11,6 9,7-9,8 10,5-10,7 11,8-11,9 RSV..A 317 0,45 0,35 0,90

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

-2-

WPP 001/4 MB 10,8 t 5. Edition.

supersedes 5.72 (1) PE 6 P 100/720 RS 15 RQ 250/1100 PA 66D (2) Daimler-Benz RQ 250/1100 PA 50 D company: OM 346 (3-4)(A) EP/RSV250-900P1/303 engine: (192 PS - 1) EP/RSV300-1100P1/303 (5) RS 15 Z

(230 PS - 2) (165 PS - 3)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(175 PS - 4)(0M 346/355 - 5\*)

#### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
	12	9,3 - 10,3	0,4			
1000	6 9	2,6 - 3,4 5,9 - 6,7		į		
200	9	2,5 - 3,3		i i		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQ.. PA 66D (1)

PRG che	Checking of slider PRG check Control rod travet mm 1 2		speed re cint Control red travel mm 4	Test spec Control red travel	cifications 4 rev/min	Idle speed regulation Setting point Control rev/min 7 8 9			cifications 5 Control rod travel mm	rev/min	Control rod (3)
1050	14,4-15	1050	14,7		14,4-14,7 10,0-13,5 3,0- 5,0 0	570	0	200 300 400 470	6,6-7,2 4,5-5,5 0,8-2,5 0	450 700 940	15,9-16,6 15,3-15,6 14,7-14,8

Torque-control travel

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery Idle speed Control		
røv/min 1	cm³/-1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
1090	93,5 - 95,0	500	900 600 450	91,5 - 94,0 96,5 - 99,0 89,5 - 92,5	100	14 - 17	
When	checking (column	2 and 5) increa	se by	± 0.4 cm <sup>3</sup> /100h	<del></del>		

Checking values in brackets

#### **B.** Governor Settings

RQ .. 250/1100 PA 50D (2)

Checkin PRG che	g of slider eck Control rod	Full-load speed regulation Setting point   Test specifications   4				Idle speed regulation Setting point Control Control			Torque control  Control rod		
rev/min	travel	rev/min 3	rod travel mm 4	red travel mm 5	rev/min 6	rev/min 7	rod travel mm 8	rev/min 9	travel mm 10	rev/min	travel mm 12
1050	14,7-15,3	1050	5,0	1100 1120 1150 1200 1260	14,9-15,0 14,3-15,0 9,8-13,3 3,0-5,0	560	0	300	7,0-8,0 6,6-7,6 4,5-5,5 0,7-2,5	700 950	15,9-16,0 15,0-15,3

Torque-control travel on flyweight assembly dimension a = 0,3

0,3 <sub>mm</sub>

Speed regulation. At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics (3b)	Starting for Idle spee	Comb
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
Pump .	. S15 with govern	or RQPA 50 D	(2)			
1090	123,5 - 126,5		700	125,0 - 129,0 122,5 - 126,5 116,5 - 121,5	100	18 - 20,5

Checking values in brackets

#### **B.** Governor Settings

Checking of slider PRG check Control rod		<b>∼</b> l	Full-load speed regulation Setting point   Test specifications   Control   Control			Control Control rod			Control rod	Control rod		
	travel	rev/min 3	rod travel	rod travel mm 5	rev/min 6	rev/min 7	rod travel mm 8	rev/min 9	travel mm 10	rev/min 11	travel mm 12	

Torque-control travel on flyweight assembly dimension a

mm

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting f	uel delivery d I Control
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	red travel cm <sup>3</sup> /1000 strokes / mm 7
	<u> </u>					
	,					
		·				

#### **B. Governor Settings**

EP/RSV .. 250-900 P1/303 (3-4)

18 7 /	r rated speed		Interme	Intermediate rated speed			- Lower rated speed			rque control
Degree of deflection of control	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection	rev/min	Control rod travel mm	rev/min	travel mm
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca. 46	900	16,0	us + b	without auxiliar			250	6,0	880	0
	950 980	9,5 4,5	] WICH	without auxiliary		y sprin	100 250	19 - 21 5,7-6,3	450	0
20		8,2-10,8 2,0-4,0 0-1	with	auxil.	iary :	pring	350 460	1,7-3,8	300	1,2 - 1,8

## C. Settings for Fuel Injection Pump with Fitted Governor

<b>C</b>	ull-load stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting f	uel delivery 5	Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
Pump outpu 880 880	S15 with go t 165 bhp) 93,0 - 96,0 99,0 - 102,0	ernor 250-9 910 (EP/R 910 (EP/R	SV)	303 (3 - Contin (4 - Specia output 175	) D	·		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

EP/RSV .. 300-1100 P1/303 (5)

Degree of deflection of control lever	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed   Control rod travel mm	11 0 /	rque control   Control rod   travel   mm   11
ca.58	1100 1140 1180	16,0 12,0 7,0	witho	out aux	xiliar	ca.23 y spring	200	7,5 19 - 21	1080 500	0
29	1150 1200 .1340	10,0-12,0 3,8- 4,2 0-1	with	auxil	iary s	pring	300 400 550	7,2-7,8 3,3-4,2 0-1	350	1,2-1,8

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limitat.	3a Fu	el delivery aracteristics	Starting f	uel delivery 5	<b>4a</b> ) Idi	e stop   Control rod
	cm <sup>9</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5 g <sup>®aa</sup>	rev/min 6	cm³/1000 strokes 7	rev/min 8	travel mm 9
for 3 appro *(Ful	46/355*) x. 10 mm contro	l-rod travel ssibly speed	limi	1/303 (5 - varia 1020 (EP/RSV) tation - is star				٠.

Checking values in brackets En

\* 1 mm less control rod travel than col. 2

## Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 13,8 b 2

1. Edition

PE 6 P 100 A 420 LS 89 Komb.-Nr. 0 401 876 099

RSV 250-1000 P 7/304 R

supersedes KHD Company F 6 M 716

Note VDT-I-401/103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,0-2,1 Port closing at prestroke (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

En

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	14,9+0,1	15,2-15,4	0,35(0,6)			
250	8,9-9,1	1,8-2,4	0,35(0,55)			7

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

•		Interme	diate rate	d speed	(4)	Lower	rque control		
travel mm	travel				Control- lever deflection	rev/min	travel mm	rev/min	Control rod travel mm
2	3	4	5	6	7	8	9	10	11
800	0,3-1,0	-	-	_	ca. 25	250	8,5	•	-
X =	5.0				ļ	250	8,9-9,1		
						530-59	0=2,0		1
4,0	1145-1175								·
	Control rod travel mm 2 800 X = 13,9	mm mm rev/min 2 3  800 0,3-1,0  X = 5,0  13,9 1040-1050 4,0 1145-1175	Control rod travel   mm   mm rev/min   2   3   4	Control rod travel   mm   mm rev/min   2   3   4   5     5	Control rod travel   mm   rev/min   2   3   4   5   6   6	Control rod travel mm   Control rod travel mm   mm rev/min   2   3   4   5   6   Control lever deflection in degrees   7	Control rod travel mm rev/min   2   3   4   5   6   Control tever deflection in degrees   8   800   0,3-1,0   -   -   -     Ca. 25   250	Control rod travel   mm rev/min   2   3   4   5   6   Control rod travel   mm rev/min   2   3   4   5   6   Control rod travel   mm mev/min   9   800   0,3-1,0     -	Control rod travel mm rev/min   2   3   4   5   6   Control rod travel mm rev/min   3   4   5   6   Control rev/min mm rev/min   9   10

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

		Il-load stop		(3a) Fu	nel delivery aracteristics	Starting I	uel delivery 5	(4a) Idi	e stop
	Test oil te rev/min	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
Ta	ke fro	m VDT-I-401/103	1040-1050*	-	-	-	<b>-</b>	-	-
				·					

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.86

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. 4. 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH. 2

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps 2 and Governors

40

221 A

WPP 001/4 FIA 13,8 a 9. Edition

FU

PE 6 P 120 A 720 RS 167

RQ 225/1100 PA 118 R

supersedes 3.83 company: Fiat

Komb.-Nr. 0 401 846 225

engine:

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

T	(1,95-2,15)	11111 (110111 200)	<del></del>	- <del></del>	<del></del>
Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,1+0,1	17,0-17,3	0,5(0,9)			
7,5-7,7	1,7-2,3	0,8(1,2)			
	Control rod travel mm 2	Control rod travel  mm cm³/100 strokes  2 11,1+0,1 17,0-17,3	Control rod travel  mm cm³/100 strokes 2 3 Difference  cm³/ 100 strokes 4  11,1+0,1 17,0-17,3 0,5(0,9)	Control rod travel  mm cm³/100 strokes 2  11,1+0,1  17,0-17,3  Difference cm³/100 strokes 4  Difference cm³/100 strokes 4  2  0,5(0,9)	travel   cm³/100 strokes   cm³/ 100 strokes   cm³/ 100 strokes   mm   cm³/100 strokes   2   3   11,1+0,1   17,0-17,3   0,5(0,9)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checking of slide PRG check Control travel rev/min mm	(1)	Full-load s Setting po rev/min 3	•	Test spec Control rad travel	rev/min	Idle spec Setting p rev/min 7	coint Control   red travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod travel
600 15,	6-16,4	600	16,0	10,1 4,0 1350	1145-1160 1190-1220 0-1,0		7,6	225	min. 9,1 7,5-7,7 405 = 2,0	600	11,1-11,2 11,1-11,3

Torque-control travel on flyweight assembly dimension a =

mm

1145-1160 min-1 Speed regulation: At 1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control tever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	Starting for	uel delivery d (6)
rev/min 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel,
1100	170,0-173,0 (167,0-176,0)	-	-	<b>-</b>	100	19,0-21,0

Checking values in brackets

7.83

**BOSCH** 

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 FIA 13,8 a 4 3. Edition

PE 6 P 120 A 720 RS 167 Z

RQ 225/1100 PA 118 R

supersedes 3.83

company: Fiat

221 A

Komb.-Nr. 0 401 846 345 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

210 kW (286 PS)

estoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

• ,		(1,50-2,10)							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6			
1100	10,3+0,1	16,3-16,6	0,5(0,9)						
225	7,5-7,7	1,7-2,3	0,8(1,2)						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

				idle spec	•		cifications (5)	Torque control			
rev/min	Control rod travel mm 2	rev/min	Control red travel rrim 4	Control rad travel rnm 5	rev/min 6	rev/min 7	Control rod travel rom 8	rev/min 9	Control rod travel		Control rod travel mm
550	15,6-16,4	550	16,0	9,3 4,0 1300	1145-1160 1185-1215 0-1,0	225	7,6	225	min. 9,1 7,5-7,7 05 = 2,0		10,3-10,4 10,3-10,5

Torque-control travel on flyweight assembly dimension a =

1145-1160 min-1 Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	felivery on control lever mp. 40°C (104°F)	Control rod stop	<b>3</b>	Fuel delivery characteristics			Starting f	uel delivery d	6 Contrel
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min		rev/min 4	cm <sup>3</sup> /-1000 strokes 5		rev/min 6	7	red travel
1100	163,0-166,0 (160,0-169,0)	-		•	<b>-</b> ,		100	19,0-21,0	

Checking values in brackets

7.83

L10

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 KHD 40,5 c 7

2. Edition

RSUV 300-1000 P 0 A 352 PE 8 P 130 A 920/5 RS 293-1 1-6-4-5-8-3-2-7 company BA 16 M 816  $0-75-90-120-210-225-315-345^{\circ} + 0,5^{\circ} (+ 0,75^{\circ})$ engine: Komb.-Nr. 0 401 378 115 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min	Control rod travel	Fuel delivery cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0)			]
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B.** Governor Settings

1 Uppe	r rated speed		interme	diate rated	speed	(4)	Lower	Lower rated speed 3 Torque		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-1,0		-	_	ca.22	300	5,7	1000	13,5-13,6
	X =	2,0					300 325-38	6,1-6,3	280 450	14,7-15,3 13,5-13,6
ca.66	12,5 4,0 1225	1040-1050 1060-1090 0,3-1,7		1			323-30.	7-2,0	130	13,3313,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes		6 Rotational- speed limitat		net delivery paracteristics	Starting (	tuel delivery 5	4a) Idle stop	
		Note:   changed to)   rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
on re	specifications quest. operates in m.	1040-1050*	-	-	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2

## **Test Specifications** Fuel Injection Pumps (A) and Governors

KHD

WPP 001/4 KHD 30,4 k 2

BA 12 M 816

1. Edition

supersedes: -

company

engine

RSUV 300-1000 POA 348 R PE 12 P 130 A 920 RS 294-1 Komb.-Nr. 0 401 870 078

1-10-5-7-2-11-6-8-3-12-4-9 je  $30^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

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I	3	)
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Port closing at		2,0-2,1 1,95-2,15)	mm (from BDC)	; RW =	9,0-12,0 mm	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			
Adjust the fuel	delivery from each c	outlet according to the va	lues in	]		

#### **B. Governor Settings**

14 ' /	r rated speed Control rod travel mm			ediate rate		Control- lever deflection in degrees	rev/min	rated speed  Control rod travel  mm	3 To	rque control  Control rod  Travel  mm
loose	800 x =	0,3-1,0 4,0	-	5	<u>-</u>	ca. 22	300	5,7 6,1-6,3	1000 280 450	14,7-15,3
са. 66 <b>2а</b>	12,5 4,0 1230	1040-1050 1065-1095 0,3-1,7		,			330-39	0 = 2,0		13,5 13,0

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

Est oil temp. 40°C (104°F)		Rotational- speed limitat		uel delivery haracteristics	Starting Idle	Starting fuel delivery 5 4a Idle stop					
rev/min	cm³/1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm			
	specifications quest.	1040-1050*	-	-	-	-	-	-			

Checking values in brackets

4 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung.
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WPP 001/4 KHD 30,4 k 3

1. Edition

PE 12 P 130 A 920 RS 294-1 Komb.-Nr. 0 401 870 077

RSUV 300-750 P9A 350 R

supersedes. company KHD

1-10-5-7-2-11-6-8-3-12-4-9 je  $30^{\circ} \pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ ) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

BA 12 M 816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

**Testoil-ISO 4113** 

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod trave! mm 2	Fuel delivery cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
750	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			
					0	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	er rated spee	=	Interm	ediate rat	ed speed	(4)	Lowe	r rated speed	3 Torque control		
Degree of deflection of control lever	travel mm	Control rod travel mm rev/min	FF.			Control- lever deflection	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	in degrees 7	8	9	10	11	
loose	800	0,3-1,0	<b>]</b> -	-	_	ca. 25	300	5,7	-	-	
	x = 4	,0	1				300	6,1-6,3	1		
ca. 62	12,5 4,0 980	790-800 815-845 0,3-1,7			4		330-3	0 = 2,0		·	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	ult-load stop emp. 40°C (104°F)	Rotational- speed limitat		uel delivery paracteristics	Starting t	luel delivery 5	4a Idle stop	
rev/min	cm³/1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
	specifications quest.	790-800*	-	-	-	-	-	<u>-</u>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Geschaftsbereich KH. Kundendienst: Kfz-Ausrüstung. € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 KHD 30,4 k 4

1. Edition

PE 12 P 130 A 920 RS 294-1 RSUV 300-1000 POA 352 Komb.-Nr. 0 401 870 078 1-10-5-7-2-11-6-8-3-12-4-9 je 30° $^\pm$ 0,5°( $^\pm$ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedescompany KHD BA 12 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 mm (from BDC) (1,95-2,15)

; RW = 9,0-12,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm (2)	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3 ·	6
700	13,5+0,1	35,8-36,1 (35,5-36,4)	0,6 (1,0)			
300	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0 (1,4)			
				]		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-ISO 4113

1 Uppe	er rated speed		Interm	ediate rate	ed speed	(4)	Lowe	3 Torque control		
Degree of deflection	travel	Control rod travel				Control- lever		Control rod travel		Control rod travel
of control lever 1	mm 2	mm rev/min 3	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
loose	800	0,3-1,0	-	*	-	ca. 22	300	5,7	1000	13,5-13,6
	x = 2	2,0					300	6,1-6,3	280 450	14,7-15,3 13,5-13,6
ca. 66	12,5 4,0 1225	1040-1050 1060-1090 0,3-1,7			1		325-38			-

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ult-load stop	6 Rotational-speed limitat 3a Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stop			
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
2	specifications uest.	1040-1050*	-	<b>-</b>	-	-	-	-

Checking values in brackets

3.86

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung. c: 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

<sup>\* 1</sup> mm less control rod travel than col. 2

WPP 001/4 KHD 30,4 1

1. Edition

RS 250/1000 P1A 422 R

PE 12 P 130 A 920 RS 294-1

Komb.-Nr. 0 401 870 075

1-10-5-7-2-11-6-8-3-12-4-9 je  $30^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes = KHD company: BA 12 M 816 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6 (1,0			
250	6,2-6,4		1,0 (1,4			
			,			

Adjust the fuel delivery from each outlet according to the values in .

#### **B.** Governor Settings

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	(4)	Lower	rated speed	(3) To	rque control
Degree of deflection of control lever	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm 9	rev/min	Control rod travel mm
loose	800	0,3-0,7	-	-	-	ca. 23	250	6,2	1000	13,5-13,6
VH ca.55	x = 12,5 4,0 1260	5,0 1040-1050 1095-1125 0,3-1,4		,		150-200	250 400-460	6,1-6,3 = 2,0	400 550	14,7-15,3 13,5-13,6

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Rotational- speed limitat. Note: changed to) rev/min		el delivery aracteristics cm <sup>3</sup> /1000 strokes	Starting f Idle rev/min	cm <sup>3</sup> /1000 strokes	49	e stop Control rod travel mm
1	2	3	4	5	6	7	8	9
	specifications quest.	1040-1050*	-	<b>-</b>	-	-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

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WPP 001/4 KHD 15,2 b 2

1. Edition

En

PE 6 P 120 A 420 LS 324

RSV 250-1000 P 7/304 R

supersedes

KHD

Komb.-Nr. 0 401 876 202

company engine.

BA 6 M 816

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,0-2,1 (1,95-2,15)

mm (from BDC)

; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	14,9+0,1	29,5-29,9 (29.3-30.1)	0,5(0,9)			
250	6,0-6,2	2,0-2,6	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	r rated speed		Interme	diate rated	speed	Lower rated speed			3 Torque control		
Degree of deflection	Control rod travel	travel				Control- lever		Control rod travel		Control rod travel	
of control lever	mm	mm rev/min		<u> </u> -		deflection in degrees	rev/min	mm	rev/min	mm	
<u> </u>	2	3	4	5	6	7	8	9	10	<b>j</b> 11	
loose	800	0,3-0,7	-	-	-	ca. 24	250	5,6	1000	14,9-15,0	
	х :	= 5,5					250 345-40	6,0-6,2	300	16,2-16,8	
ca.67	13,9 4,0 1250	1040-1050 1080-1110 0,3-1,4					345-40	5=2,0	450	14,9-15,0	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

9	ill-load stop	Rotational-speed limitat. 3a Fuel delivery characteristics			Starting Idle	fuel delivery 5	4a) Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
	specifications quest.	1040-1050*	-	-		19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Geschsitsbereich KH. Kundendienst. Kf2-Ausrüstung. € 1890 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 KHD 15,2 f

1. Edition

En

PE 6 P 130 A 420 LS 324-1 RSV 250-1000 P7A 304

supersedes

company KHD

Komb.-Nr. 0 401 876 281 Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

engine: BA6 M 816

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

mm (from BDC)

RW = 9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm³/ 100 strokes	mm	cm-//100 strokes	mm
750	12 5 0 1	35,8-36,1 (35,4-36,4)	4	2	3	6
790	13,5+0,1	(35,4-36,4)	0,6(1,0)	<b></b>	<del>                                     </del>	4
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	•	er rated speed rev/min   Control rod   Control rod		ediate rat	ed speed	Lower rated speed			3 Torque control		
Degree of deflection	travel	travel				Control- lever		Control rod travel		Control rod travel	
of control lever 1	mm 2	mm rev/min	4	5	6	deflection in degrees 7	rev/min 8	mm 9	rev/min	mm 11	
loose	800	0,3-0,7	-	-	-	ca.22	250	5,7	1000	13,5-13,6	
	Х :	x = 5,0					250	6,1-6,3	300	14,7-15,3	
ca.64	12,5 1040-1050 4,0 1065-1095 1225 0,3-1,4				,		330-39	U=2,U	450	13,5-13,6	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

	uil-load stop	Rotational- speed limitat  Rotational- speed limitat  Rotational- speed limitat			Starting fuel delivery 5			4a Idle stop		
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm		
	specifications quest.	1040-1050*	-	<b>-</b>	-	-	•	-		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

4. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

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WPP 001/4 KHD 15,2 c1

1. Edition

En

PE 6 P 130 A 420 LS 324-1

RS 250/1000 P 1 A 422 R

supersedes.

company:

engine:

BA 6 M 816

KHD

Komb.-Nr. 0 401 876 280

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,0-2,1

Port closing at prestroke (1,95-2,15)

estoil-ISO 4113

mm (from BDC) RW= 9,0-12,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
750	13,5+0,1	35,8-36,1 (35,5-36,5)	0,6(1,0)	2		6
250	6,1-6,3	2,0-2,6 (1,7-2,9)	1,0(1,4)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interme	diate rated	speed	4	Lower	rated speed	(3) To	rque control
Degree of	Control rod	Control rod travel			1	Control-	1	Control rod travel		Control rod travel
deflection of control	mm	mm rev/min				lever deflection in degrees	rev/min	mm	ten/win	mm
lever 1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-0,7	-	-	-	FHca.23	250	6,2	1000	13,5-13,6
	х :	= 5,0					400-460=	2,0	400 550	14,7-15,3 13,5-13,6
VHca.57	1	4040 4050		4	•					10,0-10,0
20 ull	12,5 4,0	1040-1050 1095-1125				150-200			·	
	1260	0,3-1,4		· · · · · · · · · · · · · · · · · · ·		<u> </u>	<u> </u>	<u> </u>	<u>L</u>	

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational speed limitat 3a Fuel delivery characteristics			Starting t	luel delivery 5	4a Idle stop	
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes		Note: changed to) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
	specifications quest.	1040-1050*	-	-	-	-	-	-
							<u>.</u>	ļ

Checking values in brackets

\* 1 mm less control rod travel than col. 2

3.86

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

d 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 KHD 20,2 a

1. Edition

PE 8 P 120 A 620/4 LS 325 RSUV 250-600 P 8 A 321 R supersedes - 1-4-7-6-8-5-2-3 je 45° ± 0,50 (± 0,75°) company KHD Values only apply to test nozzle-and-holder assembly BA 8 M 816 1 688 901 019 and fuel-injection test tubing 1 680 750 067 KOMb.-Nr. 0 401 878 103

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

(1,95-2,15)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min		cm <sup>3</sup> /100 strokes	cm³/ 100 strokes	mm -	cm <sup>3</sup> /100 strokes	mm
1	2	30 7 20 4	4	2	3	6
600	14,9+0,1	28,7-29,1 (28,4-29,4)	0,5(0,9)			
250	6,0-6,2	1,6-2,3	0,8(1,2)			,
		(1,3-2,6)				
				1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	Interme	diate vated	speed	Control- lever deflection in degrees 7	rev/min	rated speed   Control rod   travel   mm	3 To	rque control   Control rod   travel   mm
loose	775 X = 1	0,3-1,0 4,0	-	-	-	ca.25	250 250 260-3	5,6 6,0-6,2 20 = 2,0	600 220 350	14,9-15,0 16,2-16,8 14,9-15,0
ca.65	13,9 4,0 800	640-650 660-690 0,3-1,7		,						

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	ii-load stop	6 Rotational- speed limitat 3a Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stop			
Test oil te	emp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
	ıo <del>wii •</del>	,640 <b>-</b> 650 *	-	-	100	19,5-21,0 mm RW	-	-
Adju	t according to	the engine	record	s.	i			
					ŀ	i		
								j
						}		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

6.83

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. ₹ 1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne nar Robert Bosch GmbH. ①

# Test Specifications Fuel Injection Pumps (1) and Governors

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WPP 001/4 RVI 9,8 b 1

2. Edition

PE 6 P 120 A 321 RS 438 RQV 275-1200 PA 648

Values only apply to test nozzle-and-holder assembly company
1 688 901 019 and fuel-injection test tubing 1 680 750 067 engine:

supersedes 1.83 company: RVI

engine: MID 062045 Komb.-Nr. 0 401 856 153

estoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

travel	Fuel delivery	Difference cm³/	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
2	3	4	2	3	6
11,2+0,	1 13,4-13,7	0,5(0,9)			
5,9 - 6,	1 0,7-1,3	0,8(1,2)			7
		}			1
		2 3 11,2+0,1 13,4-13,7	mm cm <sup>3</sup> /100 strokes 100 strokes 4  11,2+0,1 13,4-13,7 0,5(0,9)	mm cm <sup>3</sup> /100 strokes 100 strokes mm 2  11,2+0,1 13,4-13,7 0,5(0,9)	mm cm³/100 strokes 100 strokes mm cm³/100 strokes 2 3 11,2+0,1 13,4-13,7 0,5(0,9)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed	,	Intermediate	rated sp	eed	Lower rated	speed		Sliding e	leeve travel
deflection	Control	Control rod ta	Degree of deflection of control	ļ	Control rod travel	Degree of deflection		Control rod travel	Olicing S	1
	rod travel mm 2	rev/min (2a)	lever		mm 4	of control lever 7	rev/min	mm (3)	rev/min 10	mm 11
max.	1230	15,2-17,8	-		<u>-</u>	ca. 11	100 275	min. 7,5		0-0,9
ca. 65	10,2 4,0 1500	1335-1365				270-365		5,9-6,1	880 1200	4,7-5,0 6,1-6,3 8,3
						<b>3</b> a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		limitation intermediate speed	(3)		Starting Idle switching	, )	Torque- travel	control (5)
rev/min	cm³/1000 strokes .	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	
1200	134,0-137,0		-	-	100		8	9 -
	(131,0-140,0	)			275	7,0-13,0		
				·				
L								

Chucking values in brackets

\* 1 mm less control rod travel than col. 2

BOSCH

2. Edition

PES 4 P 120 A 320 RS 451

ROV 350-900 PA 618

supersedes 1.83

Komb.-Nr. 0 402 044 020

Port closing at prestroke

company: Baudouin

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

DNP 4 engine:

107 kW (145 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,80-2,90 (2,75-2,95) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed		Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm³/ 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
900	12,6+0,1	19,7-19,9	0,5(0,9)	2	3	6
350	7,6-7,8	2,8-3,4	0,8(1,2)			
	-					

Adjust the fuel delivery from each outfat according to the values in [

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Stidings	leeve travel
deflection	rev/min Control rod travel	Control rod travel	Degree of deflection of control	ĺ	Control rod travel	Degree of deflection of control		Control rod travel		1
lever	mm	rev/min (2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	940	15,2-17,8	-	-	<b>-</b> .	ca.30	100	min.9,2	325	1,1-1,3
ca. 60	11,6 4,0 1150	940-950 1000-1030 0-1,0				350-440	350	7,6-7,8	500 750 900	3,1-3,8 6,0-6,4 8,0
			÷			<u>3</u> a				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics 5a	Starting idle switchir	, 0	Torque- travel	control 5
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
900	197,0-199,0 (194,0-202,0)		-	-	100	175,0-195,0 171,0-199,0)	-	<u>-</u>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

L21

WPP 001/4 BAO 13,2 a

2. Edition

FES 5 P 120 A 320 RS452 ROV 350-900 PA 618

supersedes 2.83 company: Baudouin

1 - 2 - 4 - 5 - 3 je  $72^{\circ}$   $\stackrel{+}{_{0}}$ ,5°  $(\stackrel{+}{_{0}}$ ,75°) company: Baudouin DNP 5 values only apply to test nozzle-and-holder assembly engine: DNP 5 1 688 901 019 and fuel-injection test tubing 1 680 750 067 Komb.-Nr. 0 402 045 025

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at prestroke

mm (from BDC)

RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,6+0,1	19,7-19,9	0,5(0,9)			
350	7,6-7,8	2,8-3,4	0,8(1,2)			
	•					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed		Inte	rmediate	rated sp	eed		Lower rated	speed		Slidings	leeve travel
Degree of deflection of control	rev/min Control rod travel	Control rod travel	ノ defi	ree of ection ontrol		Control ( travel	od _	Degree of deflection of control		Control rod travel	0	1
lever	mm	rev/min (2	a) leve		rev/min	mm	(4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4		5	6		7	8	9	10	11
max.	940	15,2-17,8	3	-	·	-	•	ca.30	100	min.9,2	325	1,1-1,3
ca.60	11,6	940-950							350	<sup>1</sup> 7,6-7,8		3,1-3,8 6,0-6,4
	4,0 1150							350-440		•	900	8,0
								<b>3</b> a				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		intermediate speed	Fuel deliv	very characteristics (5a)	Starting Idle awitchir	•	Torque- travel	control 5  Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm navei
1	2	3	4	5	6	7	8	9
900	197,0-199,0 (194,0-202,0)	940-950*	1	-	100	175,0-195,0 (171,0-199,0		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

40

WPP 001/4 RVI 8,8 c 2. Edition

En

PE 6 P 120 A 321 RS 359

RQV 275-1200 PA 538

supersedes 4.81 company: RVI

Komb.-Nr. 0 401 856 148

Values only apply to test nozzle-and-holder assembly

engine: MID 06.20.30

1 688 901 019 and fuel-injection test tubing 1 680 750 067

140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rey/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1200	9,5-9,6	13,0-13,2	0,5(0,9)			
275	4,6-4,8	1,3-1,9	0,8(1,2)			
				į		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate rated speed				Lower rated	speed	Stiding steeve travel		
deflection of control	rev/min Control rod travel mm	Control rod travel mm rev/min	(a) (2a)	Degree of deflection of control lever	rev/min	· ·		Degree of deflection of control ever	rev/min	Control rod travel mm 3	rev/min	mm 1
1	2	3		4	5	6		<i>'</i>	8	9	10	11
max.	1280	15,2-1	7,8	-	·		C	ca. 9		min. 6,2		1,1-1,3
ca. 63	8,5 4,0 1450	1240-1 1300-1 0-1	330					<b>3</b> a)	275	4,6-4,8	950 1200	5,6-5,8 7,6-7,8

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b timitation intermediate speed	Fuel deliv	rery characteristics 5a	Starting Idle switchir	. 0	Torque- travel	Control rod
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4 .	5	6	7	В	9
1200	130,0-132,0 (127,0-135,0)	1240-1250*	-	<b>.</b>	100	190,0-210,0	-	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

7.83

BOSCH

Geschäftsbereich KH. Kundendienst. Klz-Ausrüstung.
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estoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

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WPP 001/4 MAN 18,2 b
1. Edition

En

PE 10 P 120 A 520/4 LS 3830 RQV 250-1150 PA 668-7 1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315°  $^\pm$ 0,5° ( $^\pm$ 0,75°) Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067

supersedes -

company: MAN

engine: D 2840 LE 463 kW

MAN-Nr. 2-7668

Komb.-Nr.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

0 401 849 715

## A. Fuel Injection Pump Settings

Port closing at pres	troke	(4.15-4.35)	mm (from BDC)		Cy1.10; RW =	9,0 - 12,0 mm
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,2+0,1	20,5-20,7	0,5 (0,9)			
250	7,0-7,2	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed		Stidings	leeve travel
	rev/min Control rod travel	Control rod travel	18	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		1
lever	mm	rev/min	(2a)	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	_	4	5	6	7	8	9	10	11
max.	1150	15,2-17	,8	-	• -	-	ca. 12	100	min. 8,6	350	2,0-2,4
ca. 66	11,2 4,0 1450	1190-120 1340-13 0 - 1,0				,			7,0-7,2 465=2,0	750 1150	6,1-6,3 8,6
							<b>3a</b>				

Torque control travel a = \_ mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)  2  rev/min   cm³/1000 strokes		Rotational-speed (2b) limitation intermediate speed	high idle s	very characteristics 5a peed 5b cm³/1000 strokes	idle switchir		Torque- travel	Control 5  Control rod travel
1	2	3	4	5	6	7	8	9
1150	205,0-207,0 (202,0-210,0)		-	-	100	190,0-210,0 (186,0-214,0		-
				·	250	17,0-23,0 (14,0-26,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

4.80

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